Matching message strategies to personality characteristics:

The usability of alternative variables in tailored health communication

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By experience we find out a short way by a long wandering.
Roger Ascham, 1570

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1

INTRODUCTION: HEALTH COMMUNICATION

1.1 Being healthy

For one of the studies described in this thesis, I asked people to answer yes or no to the following statement: 'Being healthy is important to me'. Out of 223 people, only 13 said no. The other 94% of the people agreed that health was an important issue in their lives. Ironically, in the same group, about half of the respondents reported that they had had unprotected sexual intercourse – a potential health hazard. So, while these people say that it is important to be healthy, their actions tell a different story. This does not apply to sexual behaviours exclusively, nor is it restricted to the people in this sample. To illustrate this observation: statistics indicate that almost half of the deaths in the United States are the result of so-called 'modifiable behavioural risk factors' (Mokdad, Marks, Stroup, & Gerberding, 2004), or, in other words, 'people's own unhealthy behaviour'. These factors include, but are not limited to, the use of tobacco, a poor diet, alcohol consumption, unsafe sexual behaviours, drugs abuse, and incidents with fire-arms. Apparently, though we would like to live 'happily ever after', we are not capable of keeping our body healthy.

The most visible example of the unhealthy lifestyle in the Western world is the alarming increase in seriously overweight citizens. Not only in the United States, where two out of three adults and one in every three children is too heavy (Institute of Medicine, 2012), also in the Netherlands about half of the adults is overweight (RIVM, 2012). To emphasize the seriousness of this development, researchers and policymakers speak about 'the obesity crisis', 'an epidemic', or even 'a tsunami of obesity that will eventually affect all regions of the world' (Anand & Yusuf, 2011, p. 259). Obesity is a multi-facetted problem, and it has become clear that it is much more complex than just blaming people for eating too much or exercising too little (Schwartz & Brownell, 2007). It is not just a matter of individual people making the 'wrong' choices, but also our current society in which unhealthy choices are often the most obvious option. Physically, our lives have become easier and more comfortable over the past decades; tasks that require physical effort are getting scarce. At the same time, food is abundantly available, including all the high-caloric, fatty, and sugary food that we are pre-programmed to prefer. This has led to living conditions that can be referred to as a 'toxic food environment' (Brownell & Horgen, 2004), in which obesity is a predictable and logical consequence of the way current society is arranged. From this perspective, making healthy choices can be very hard, because 'modern conditions have created an environment, which makes unhealthy behaviour the default' (Schwartz & Brownell, 2007, p. 87).

As with all complex problems, there is not one simple solution or magic trick that can make people live more healthily. Multiple factors would need to be

addressed, in an organized and coordinated manner, to change the current tide (Maio et al., 2007; Schwartz & Brownell, 2007; Verplanken & Wood, 2006). There are indications that laws and legislation can help in encouraging people to live more healthily (Noar, 2006). Since the ban on smoking in public buildings in the Netherlands, for example, more people seem to have adopted smoke-free policies in their own homes (Mons et al., 2012). Some experts (Brownell & Horgen, 2004; Schwartz & Brownell, 2007) advocate restrictions on food advertisements aimed at children and the sale of convenience foods in schools, and recently the mayor of New York launched a bill to stop restaurants, movie theatres and vendors from selling soft drinks in sizes larger than 400 ml (Grynbaum, 2012). All these rules are meant to change people's behaviour by restricting their options, so that the healthy option will become the default one.

However, people have a right of self-determination, and laws and legislation are not always feasible. Having governmental agents monitor your food intake, or even whether or not you practice safe sex, is a highly undesirable scenario to the majority of people. Thus, in most cases, the government or other authorities will have to confine themselves to advisory and educational functions, in which informing the public plays a major role. Also in the cases where direct governmental interference does take place, like introducing a tax on tobacco or a ban on large soft drinks, informing people is of great importance. Not only do people need to be informed about the new rules, also the rationale behind it and its desired positive consequences need to be explained to gain understanding and public support. Creating awareness of the problem and possible solutions on a societal level is an essential part of tackling a complex issue like obesity (Schwartz & Brownell, 2007). At the individual level, awareness and information are also important, for they may help people to gain more insight in the consequences of their choices, alternatives open to them, and the strategies to adopt these alternatives. And, as Bandura (1998, p. 624) observes: 'If people lack awareness of how their lifestyle habits affect their health, they have little reason to put themselves through the misery of changing the bad habits they enjoy'. But to have any effect, it is crucial that the information is communicated in such a way that it is understandable and believable. Therefore, this thesis is not about obesity. Nor is it about safe sex, smoking cessation, or the safe use of firearms. It is about a topic that is relevant for all these issues at the same time, and applicable to many others as well: health communication.

1.2 Health communication

1.2.1 Mass media campaigns

For the past decades, and especially since the introduction of radio and television, mass media campaigns have been used in attempts to inform people, to change the public opinion, and to promote public health. The first scholars looking into mass communication campaigns were rather pessimistic about their effects: in the 1940s and 1950s, a period also called the 'era of minimal effects' (Rogers & Storey, 1987), communication researchers concluded that campaigns often failed to achieve their goal of influencing the audience, and that the public consisted of 'chronic know-nothings', who were almost impossible to reach and persuade. Over the years, however, research methods and levels of analyses have changed, and campaign design strategies have improved. In the period that Rogers and Storey call 'campaigns *can* succeed' and the 'era of moderate effects', research focussed more on indirect effects and the conditional factors that made campaigns successful, leading to the conclusion that good design and specific campaign goals could indeed create mass media campaigns that had the potential to influence the audience.

In the current era, where the Internet has emerged as a new medium and media consumption is bigger than ever, this conclusion still holds true. Mass media campaigns have the potential to realize a change in audience attitudes, knowledge, and even behaviour, provided that they are well-designed (Noar, 2006). Meta-analyses show that well-designed campaigns can be effective on various health topics, ranging from seatbelt use to breastfeeding (L.B. Snyder, 2007), although the same analyses also show that the average effect size is only small. Noar (2006), for instance, reports an average effect size of campaigns on health behaviour of r = .05, indicating that only 0.25% of the variance in behaviour of participants can be attributed to the fact that they had been exposed to a health campaign.

To set up an effective health campaign, the campaign's design should be based on formative research with a firm base in conceptual theory (Noar, 2006; Randolph & Viswanath, 2004). Theories from social and health psychology can help identify the underlying variables that need to be targeted to realize the desired behavioural change (e.g. Fishbein & Yzer, 2003), and, subsequently, communication theory should be used to find the best way to create the messages that target those variables. Communication interventions that are thus based on theories of behaviour prediction have a higher chance of success than interventions that are not (Fishbein & Cappella, 2006).

Another important factor in designing effective messages is audience segmentation (Noar, 2006). For an anti-smoking campaign, for instance, the

audience could be divided in people who have been smoking for years and people who have just smoked their first cigarette. By dividing the audience in separate subgroups, members within each subgroup are more alike than members of different subgroups. Because the members in a subgroup share certain characteristics, they may also share certain message preferences. Messages that are designed specifically for those subgroups can be adapted to the characteristics and preferences of that particular group, and are therefore more likely to be effective.

By selecting the right media channels, people in these subgroups can be reached with messages that are designed specifically for them, which improves the effect of the message (Atkin, 2001; Noar, 2006). With the rise of the Internet and the still increasing ubiquity of computers and smartphones, targeting specific subgroups through the right media channels has become more feasible in a relatively short time span. Where it used to be laborious and expensive to create television spots or brochures for a relatively small audience, websites and print-on-demand services have now made it possible to reach smaller groups at a relatively low price.

People's preference for specific instead of generic information is not only visible in the superior effect of targeted campaigns; it is also manifest in people's own information-seeking behaviour. When searching for health information, people look for sources that they can identify with, such as fellow patients or people from their own peer group. In 2011, I interviewed experts from various health institutions in the Netherlands and while they all agreed that it is very hard to get people involved in health information at all, they also agreed that individually adapted information is the future of health communication (Hoeken et al., 2011).

1.2.2 Tailored health communication

Although targeted communication is directed at a subgroup of the total population, it is still meant to reach multiple people at the same time, ignoring the individual differences that exist between individual members of that group. When targeting and adapting messages is taken to the individual level, messages become 'tailored' to one specific individual receiver. The term 'tailored health communication' has been defined by Kreuter and colleagues as 'any combination of strategies and information intended to reach one specific person, based on characteristics that are unique to that person, related to the outcome of interest, and derived from an individual assessment' (Kreuter, Strecher, & Glassman, 1999, p. 277).

Just like tailor-made clothes, tailored health messages fit better than generic one-size-fits-all clothes or messages, because they are made to the exact size and

shape of the person they are meant for. Like a tailor measuring a customer's waist, shoulders, arms and neck to make a perfectly fitting shirt, a health communication designer has to measure the relevant characteristics of the recipient to make a tailored health message. As a result, the tailored message contains information that is geared to the individual characteristics of that single person, omitting irrelevant and unnecessary information, and is thereby expected to be more persuasive to that person (Kreuter, Strecher et al., 1999).
Figure 1.1 shows an example of a tailored health message. It displays the front page of a brochure about colorectal cancer screening that is tailored to a member of an integrated health care system in the United States, in this example the fictitious person 'Ken'. The contents are based on his name, age, gender, history of prior cancer screening, and history of health maintenance exams, as retrieved from the database of the health care system. In addition, prior to creating the brochure, Ken has been interviewed over the phone about his screening preferences, his barriers to getting screened, his motivations, and other aspects of his thoughts on health. Combined, this information has been used to create a comprehensive brochure that is made for Ken specifically: it reminds him of important values, accounts for his doubts and fears, and explains about the risk of cancer for people of his age and gender.

Reading or listening to tailored communication is supposed to have an effect on the way the information is processed and stored in memory. Because the contents of the tailored message are personally relevant, people are thought to pay more attention to it than to a generic message, which also contains irrelevant information (Kreuter, Bull, Clark, & Oswald, 1999). Neuroimaging research supports the hypothesis that information processing plays an important role in the effect of tailored health communication. In a study (Chua et al., 2011) using functional magnetic resonance imaging (fMRI), participants were asked to listen to various messages about smoking cessation while their brain activity was monitored. Some of the messages were personally tailored, based on information the participant had provided, like 'a concern you have is being tempted to smoke when around other smokers'. Other messages were generic statements about smoking, like 'some people are tempted to smoke to control their weight or hunger', and generic statements about other subjects, like 'the African elephant has larger ears than the Indian elephant' (Chua et al., 2011, supplementary information, page 2). In a separate session, participants' brain activity was monitored while they listened to adjectives (like 'happy', 'analytical', and 'shy') and judged whether these words described them or not. This task has been shown to elicit so-called 'self-related thoughts', in which people think about themselves and their own identity. After the fMRI tasks, participants received tailored information on smoking cessation and were instructed to quit smoking.

Results of the fMRI scans showed that there was overlap in the brain regions that were active while generating self-related thoughts and while listening to the tailored messages, as compared to listening to untailored or unrelated information. This implies that the part of the brain that is used to process information about the self, in this case the dorsomedial prefrontal cortex, is also used to process messages that are tailored to one's own specific situation, but not (or less) to process generic messages. More importantly, this brain activity was shown to predict the chance that participants actually quit smoking: activity of the dorsomedial prefrontal cortex while listening to the tailored messages significantly predicted the odds that the participant had stopped smoking four months after the intervention (Chua et al., 2011). These results illustrate how tailored health messages have an advantage over generic health information: when listening to the messages, the information is processed in a different way and related to people's self-concept. This allows for a more thorough understanding of the message, and a more efficient integration of the information with one's self-image.


InsideHealth
Your Guide to Colon Cancer Screening
Ken Resnicow Edition
Ken,
Welcome to your personal edition of Inside Health! Based on what you told us on the phone, we created this newsletter just for you - to help you decide about getting checked for colon cancer. Here are a few of the things we heard you say ...
You care about
• What God expects of you.
• Being responsible for your health.
• Being a role model.
According to our records, you are overdue to be checked for colon cancer. You might not have gotten checked yet because you...
• Are too stressed to deal with it right now.
• Have been putting it off for a little while.
Knowing all of these things, we made this newsletter just for you. Inside, you'll find information about the colonoscopy test as well as stories about other people's experiences getting checked. These stories are a collection of many experiences and may not represent the views of just one person.
We hope this newsletter will help you decide if a colonoscopy is right for you. Let's move forward.
INSIDE THIS ISSUE
Colon Cancer & You
Where are you?
Moving You Ahead
Vital information
Your Roadblocks
What's In Your Way?

Ken,
Welcome to your personal edition of Inside Health. Based on what you told us on the phone, we created this newsletter **just for you** – to help you decide about getting checked for colon cancer. Here are a few of the things we heard you say…
You care about:
- What God expects of you.
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- are too stressed to deal with it right now
- have been putting it off for a little while

Knowing all these things, we made this newsletter just for you. Inside, you'll find information about the colonoscopy test as well as stories about other people's experiences getting checked. […]

Figure 1.1 Example of a tailored health message used to increase colorectal cancer screening. Picture reprinted with permission of lead researcher Kenneth A. Resnicow, Ph.D. For more information about this project, see http://chcr.umich.edu/project.php?id=922 and http://www.cancercontrol.cancer.gov/hcirb/ceccr/ceccrII_michigan.html

1.2.3 Effect and restrictions of tailored communication

After more than a decade of research on tailored health communication, it has become clear that tailored health communication can indeed work. In a meta-analysis of 57 studies, Noar, Benac, and Harris (2007) concluded that tailored messages are more effective than their non-tailored counterparts. They also noted, however, that the mean effect size is small (Pearson r = .07). In a meta-analysis of computer tailored health interventions, in which the individual assessment and the selection of the appropriate message content is done by an automated computer system, Krebs, Prochaska, and Rossi (2010) also reported a significant effect of tailored messages. Their overall mean effect size was small to medium (Hedges' g = .17, where g = .15, .20, and .25 for small, medium and large effects). So, there is evidence that a tailored message will be more likely to successfully affect someone's behaviour than a generic message, but there are also indications that this effect is humble at best. Given the fact that tailoring communication involves extra costs, this small effect size can be considered problematic.

Another observation from the meta analysis of Noar and colleagues (2007) is that most studies on tailored health communication use the same handful of variables and theories to create tailored communication. The authors list eight different behavioural theories that are used in tailoring, and note that four of those theories are used in more than 80% of the experiments. Because most health communication is aimed at changing people's behaviour, it comes as no surprise that all four of these theories are behavioural theories, which describe how human behaviour comes about and when and why people will change their behaviour.

Most often used are the Stages of Change theory and its more extensive version, the Transtheoretical Model of Behaviour Change (Prochaska & DiClemente, 1983). The Stages of Change theory describes five separate stages of health behaviour change that people cycle through before they reach the new behaviour: the precontemplation phase, where there is no intention to change, the contemplation phase, where there is an intention to change, the preparation phase, where the change is prepared, the action phase, where the behaviour is actually displayed, and finally the maintenance phase in which the new behaviour has become the default. The Transtheoretical Model adds to this model the change processes and other factors that affect people's transitions from one phase to another.

The other two often-used theories are the Health Belief Model (Janz & Becker, 1984), and Social Cognitive Theory (Bandura, 1998). The Health Belief Model describes people's health behaviour as the combined effect of four factors that describe people's beliefs about a health behaviour: their perceived susceptibility

to a condition, its perceived severity, the benefits of changing their behaviour, and the barriers to change. Social Cognitive Theory is a learning theory that describes how people learn by observing other people's behaviour and its results. Applied to health behaviour change, it models health behaviour as the result of people's outcome expectations, their perceived efficacy, their goals, and the impediments towards change.

Because all these theories explain how health behaviour comes about and changes, they provide a useful base for tailoring messages. By assessing the factors that determine a person's behaviour, tailored messages can focus on the specific factors that need to be changed for that specific individual. Based on the Health Belief Model, for instance, a smoking cessation message can address the risks of smoking to a person who is not aware of those risks, but suggest possible quitting strategies to a person who is familiar with the risks yet does not know how to stop. Likewise, based on the Stages of Change theory, someone who is not yet contemplating exercise would receive a message arguing why they should consider starting to exercise, while someone who has already started exercising would receive tips on how to persist in doing so. Kreuter and colleagues (2000) labelled this 'behavioural construct tailoring', because the messages are designed to address the right behavioural determinant for each individual receiver.

In addition to addressing behavioural determinants, tailored messages can also take into account the non-behavioural differences between people, like personal, cultural or contextual circumstances (Kreuter, Oswald, Bull, & Clark, 2000). To expand on the clothing tailor metaphor: only taking a customer's measurements is not enough, the tailor will also have to ask what colour and which fabric the customer prefers. This is what Kreuter and colleagues (2000) call 'enhanced tailoring', in which not only behavioural determinants but also other factors are taken into account. They propose that this combination might be more effective than behavioural construct tailoring alone, and that future research in tailoring should look into these features: 'Ideally, tailored health communication will not only address the right behavioural variables, but do so in a way that recognizes and builds upon important non-behavioural factors that vary from individual to individual' (Kreuter et al., 2000, p. 313).

Whereas behavioural construct tailoring focuses upon selecting the best message *content* for changing the individual's behaviour, enhanced tailoring also seeks to present this content in the right *manner*. For people from a religious community, for instance, a brochure about eating fruit and vegetables can be seen as more trustworthy when it comes from their pastor ('Why God wants you to eat healthy') than when it comes from a medical professional ('Why doctors want you to eat healthy') (Campbell et al., 1999, p. 161). By taking into account

these preferences, the message would be more likely to be effective. The brochure in Figure 1.1 is also an example of a health intervention that uses enhanced tailoring.

To date, there is hardly any research focussing on enhanced tailoring and its potential advantage over behavioural construct tailoring alone. Kreuter and colleagues (2004) report on a study that compared three versions of tailored magazines: culturally tailored (non-behavioural), tailored to behavioural constructs, and tailored to both (enhanced tailoring). Contrary to expectations, enhanced tailoring in that study did not outperform the other two versions – a combination of behavioural and non-behavioural constructs did not work better than any of those two alone.

The implications of Kreuter et al.'s (2004) findings for enhanced tailoring are not clear. Although cultural tailoring was thought to add to the effectiveness of behavioural construct tailoring, the results indicate that, at least in some cases, tailoring to non-behavioural variables can be as effective as tailoring to behavioural variables. Most other experiments in the literature, unfortunately, do not investigate or report on the effects of behavioural and non-behavioural tailoring separately. They use either enhanced tailoring or behavioural construct tailoring to investigate just the effect of tailoring, without differentiating between the two. As a result, it is still unclear whether tailoring to non-behavioural variables is equally effective as tailoring to behavioural variables.

All in all, there seems to be evidence that tailoring health messages to individual characteristics of the receivers of those messages can make the message more effective. It is not clear, however, what the restrictions of theory and variable selection in creating these messages are. A handful of behavioural constructs has repeatedly been used in previous research, but experiments with alternative variables, including non-behavioural variables, is lacking.

1.3 Content of this thesis

1.3.1 Aim

The research in this thesis is aimed at expanding the knowledge on variables that contribute to the effectiveness of tailored communication. To do so, I will test the effect of using several alternative variables in persuasive health communication.

1.3.2 Overview of the chapters

In the following chapters, I will report on six experiments in which I have tested the effect of persuasive messages in relation to people's individual characteris-

tics. In each experiment I selected a message design strategy that is often used to increase the persuasiveness of a message, and searched for a personality characteristic that could be expected to make people more or less susceptible to that particular strategy. I measured these characteristics in a group of participants, and subsequently provided them with a message that did or did not employ this particular strategy. The hypothesis in all experiments was that participants who read a message that 'matched' with their personality would react more favourably than participants who read a message that did not match. Or, in other words, the effect of a certain message strategy was expected to depend on the personality characteristics of the person who read it.

In chapter 2, I tested whether describing the positive consequences of performing the advocated behaviour or the negative consequences of failing to do so had a different effect on people who were either focussed on achieving gains or avoiding losses. In chapter 3, I tested the effect of using a social norm in a message for people who differed in the degree to which they pay attention to others people's behaviour. In chapter 4, I used concrete versus abstract descriptions and measured whether they had a different effect depending on people's acceptance of vagueness and confusion. In chapter 5, the message differed in how controlling their language was, and I tested their effects on people who differed with regard to the extent to which they feel in control over their own health.

Contrary to the hypotheses, but consistent over all chapters, none of the experiments showed an advantage of tailored messages. Messages that were supposed to match a recipient's personality were not more or less effective than mismatched messages, and participants' personality characteristics did not play a role in their reactions towards the messages. In chapter 6, I discuss these results and relate them to theories on tailored health communication.

2

MATCHING MESSAGE FRAME TO MOTIVATION

The experiment in this chapter
has been published in Jongenelen and Hoeken (2013).

2.1 Introduction

2.1.1 'An apple a day keeps the doctor away': Consequence-based arguments

Every day, we make choices that can affect our health. Will I eat an apple or some chocolate? Should I floss my teeth? And do I really need to wait for the green light when crossing this road? Although the majority of these choices is made automatically and unconsciously (Bargh & Chartrand, 1999), sometimes we actually pause and think about the different options. In these cases, the consequences of the different alternatives can help decide which one is the best option at that moment. The human conscious mind can simulate various outcomes and take into account the consequences of a behaviour even before it has actually taken place, so that the most appropriate option can be selected (Baumeister & Masicampo, 2010).

Communication that tries to influence choices therefore often makes use of so-called consequence-based arguments (O'Keefe, 2013). In these arguments, an action, for instance eating apples, is encouraged by pointing out its desirable consequence: you will stay healthy. Or, alternatively, an unwanted action like smoking is linked to undesirable consequences like getting lung-cancer. These arguments are abundant in persuasive brochures on various topics (Schellens & De Jong, 2004), including campaigns that urge people to adopt a healthier lifestyle: 'smoking causes cancer', 'losing weight will make you feel better', or 'wearing seatbelts decreases the chance of fatal injuries'.

The extent to which a consequence is positive or negative influences the degree of persuasiveness (O'Keefe, 2013). A very desirable consequence is more convincing than a moderately desirable consequence, and a very undesirable consequence is more convincing than a moderately undesirable consequence. Although this may seem like an obvious statement, O'Keefe argues that most previous research has only implicitly demonstrated this effect. For example, studies that investigate argument quality generally define argument quality as the degree to which an argument is persuasive. 'Using public transport will save you money and time' is considered a stronger argument than 'using public transport will make you have to wash your car less often', because the former will convince more people than the latter. O'Keefe, however, argues that argument quality is here used as a proxy for desirability: saving time and money is generally a more desirable outcome than having to wash your car less often. But for people who vehemently hate washing cars, or in times of water shortage, the desirability and thus the persuasiveness of the arguments will be reversed.
Research into individual differences has often shown that people with different personality characteristics are persuaded by different arguments. People who

hold collectivist values, for instance, prefer products that are advertised as a way to fit in, whereas people who hold individualist values prefer products that will make them stand out (e.g. Aaker & Schmitt, 2001). There are many findings like this, and O'Keefe argues that they all boil down to the same underlying phenomenon: consequence-based arguments are more persuasive when the consequence is perceived to be highly (un)desirable. People differ in what is desirable to them, and as a result an argument that is persuasive for one person can be less persuasive for the next.

2.1.2 Gain- and loss-frames

While it is thus clear that the degree of desirability influences the persuasiveness of an argument, it is less clear what the effect of the direction of the desirability is. Are desirable consequences more persuasive than undesirable consequences of the same magnitude? Are people for instance more willing to go to the gym when they read that exercising will make them slim than when they read that not exercising will make them fat? Although both statements basically say the same, they differ in the way they are framed. Information can be phrased in a 'gain-frame', in which the positive effect of a behaviour is described ('maintaining a healthy weight leads to a longer life expectancy') or the absence of negative effects ('maintaining a healthy weight diminishes the chance of diabetes'). In a 'loss-frame', on the other hand, the negative effect of the behaviour is emphasized ('a sedentary lifestyle increases the risk of cardiovascular disease'), or the absence of positive effects ('if you don't exercise, your body will make less endorphin'). The question whether either one of these frames is more persuasive than the other has been subject of debate for years.

Because humans are in general more sensitive to negative information (Rozin & Royzman, 2001) and negative stimuli are usually registered more quickly than positive ones (Dijksterhuis & Aarts, 2003), it can be hypothesized that loss-frames are typically more persuasive than gain-frames (e.g. Johnson, Maio, & Smith-McLallen, 2005; Meyerowitz & Chaiken, 1987). In 2006, however, O'Keefe and Jensen tested this claim in a meta-analysis of 165 experiments (with a total of over 50,000 participants), and found no evidence for this generalization (O'Keefe & Jensen, 2006). They found an overall difference in the persuasiveness of gain- and loss-frames that was not only very small (r = .02), but also not significant, indicating that there is no general difference in persuasiveness between both frames.

It has also been hypothesized that the persuasiveness of the respective frames depends on the type of behaviour. Health behaviours can be aimed at either detecting an illness, for instance when performing a breast exam, or at preventing the offset of a problem, like flossing one's teeth. Based on Kahneman

and Tversky's Prospect Theory (1979), it has been hypothesized that loss-framed messages would be better at encouraging detection behaviours ('not getting your mammogram is a risk for your health'), while gain-framed messages would be more effective when encouraging prevention behaviour ('flossing will help your gums stay healthy') (Rothman, Bartels, Wlaschin, & Salovey, 2006; Salovey & Wegener, 2009). In two meta-analyses, O'Keefe and Jensen (2007, 2009) subdue this claim: in 53 experiments, with 9,145 participants, they found a small (r = -.04) significant effect of loss-frames on detection behaviour, but this effect was only visible in a small subsample of experiments in which the impact of framing on the intention to perform breast self-examination was studied. In experiments with other detection behaviours (e.g. cholesterol screenings) there was no superior effect of loss-frames. The same pattern occurred for the effect of gain-frames on prevention behaviour: in 93 experiments, with 21,656 participants, the small (r = .03) significant effect was only apparent in studies that looked at dental flossing, not in studies with other prevention behaviours (e.g. condom use). A recent meta-analysis that looked only at vaccination studies, also a preventive behaviour, found no advantage of gain-frames over loss-frames either (O'Keefe & Nan, 2012). The claim that gain-frames are more persuasive for prevention behaviours and loss-frames for detection behaviours in general seems to be premature at this moment.

All in all, there is no conclusive evidence that either a gain- or a loss-frame is more persuasive than the other, or that a persuasive advantage depends on the type of health behaviour. In the context of tailored health communication, however, and in the light of the argument of O'Keefe (2013), it is interesting to test whether this is true for everybody or whether the persuasiveness of these frames varies from person to person. If the avoidance of negative outcomes is very important to one person, and the achievement of positive outcomes very important to the next, the desirability of the outcome depends on the person and not on the frame itself. Thus, people's reactions to gain- and loss-frames may depend on their motivational orientation, as described below.

2.1.3 Motivational orientation

The behaviour of humans, as well as that of most other animals, is guided by two basic desires: the desire to avoid negative things (predators, danger, pain) and the desire to approach positive things (food, safety, mates). These desires are controlled by two (partly) separate physiological systems (Carver & White, 1994; Gray, 1982, 1990) that tune attention to relevant stimuli in the environment: the Behavioural Approach System (BAS) and the Behavioural Inhibition System (BIS). When the BAS is active, people are in an approach orientation: they are focussed on pleasant stimuli, potential gains and rewards. An activated BIS, on

the other hand, leads to an avoidance orientation in which people pay attention to potential punishments and loss. In general, the BIS and BAS are in balance, and people experience a healthy interplay between the urge to strive for rewards and avoid punishments. But the relative strength of both systems can vary between people: some are more focused on gaining rewards, others on avoiding punishments.

Individual differences in motivational orientation could lead to differences in sensitivity to gain- and loss-frames in texts. People with an approach orientation might be more persuaded by messages that focus on the desirable consequences of a behaviour (gain-frame) whereas people with an avoidance motivation might be more persuaded by pointing out the undesirable consequences of not performing the behaviour (loss-frame).

In 2004, Mann, Sherman and Updegraff tested this hypothesis, using a text about dental flossing. Half of the 64 participants read a gain-framed version of the text, the other half a loss-framed one. Before reading the text, the relative strengths of their BIS and BAS was measured using Carver and White's BIS/BAS scale (1994). After reading the text, participants received 7 pieces of dental floss, individually wrapped. After one week, they were contacted and asked how many of those pieces they had used in the past week. The hypothesized interaction was found: participants with an approach motivation reported having flossed more when they had read a gain-framed text than when they had read a loss-framed message. The reverse was true for people with an avoidance motivation.

In 2006, the same team of researchers (Sherman, Mann, & Updegraff) replicated this experiment. In addition to the self-reported use of dental floss, participants' intention to floss was measured after reading the text. Again, the results were significant in the predicted direction, even though the sample was relatively small (67 participants, 23 with an avoidance motivation and 44 with an approach motivation). The interaction effect was not only found in the self-reported behaviour, but in the intention to floss as well.

As described in chapter 1, one of the explanations for the effect of tailored health communication is that a tailored text is more relevant to the reader, who therefore pays more attention to the text. To test whether this explanation applied to the results described above, in a follow-up experiment it was tested whether the quality of the arguments for flossing moderated the interaction (Updegraff, Sherman, Luyster, & Mann, 2007). The hypothesis was that people who read a message matching their motivational orientation would scrutinize the text and would therefore be more sensitive to the quality of the arguments than people who read a mismatched text. The experimental design was the same as described above, but with an additional factor: half of the participants read a

text with strong arguments for flossing ('flossing eliminates bacteria that can damage the gums'), the other half read weak arguments ('people report that flossing helps them develop dexterity and coordination in their fingers', (Updegraff et al., 2007, p. 252). Although this led to a 2 (motivation) x 2 (frame) x 2 (argument quality) between-participants design, the number of participants was again relatively small: 136. The dependent variables were the same as before: the intention to floss and the number of used pieces of floss, plus a few additional measures like participants' attitude towards flossing. Contrary to the findings of the previous experiments, for all of these measures the interaction between frame and motivational orientation was not significant. Participants who read the text in a matching frame were not more likely to floss than participants who read the text in a mismatching frame. There was, however, a three-way interaction between argument quality, frame, and orientation: when frame and orientation matched (gain-frame for BAS, loss-frame for BIS), strong arguments led to a more positive attitude than weak arguments; when frame and orientation mismatched there was no effect of argument quality. In line with Kreuter, Strecher and Glassman's (1999) description of tailored health communication, Updegraff et al. (2007) conclude that when a text 'fits' the recipient, he or she pays more attention to it and scrutinizes it, and as a result is more sensitive to the quality of the arguments. It must be noted, however, that the same three-way interaction showed a different pattern for the number of used pieces of floss: when frame and orientation matched (gain-frame for BAS, loss-frame for BIS), there was no effect of argument quality, but when message and orientation mismatched weak arguments led to using *more* floss than strong arguments. Not only is this effect contradictory to the 3-way interaction for the attitude, it is also inconsistent with the previous experiments in which a match between orientation and frame led to using more dental floss than a mismatch.

2.1.4 Aim and hypotheses

Although Mann and colleagues (Mann et al., 2004; Sherman et al., 2006; Updegraff et al., 2007) repeatedly demonstrate an interaction effect between motivational orientation and framing, their results leave some questions regarding the generalizability of these results. Not only is the behaviour the same in all three studies, albeit operationalized through slightly different variables, the experimental texts appear to be identical over all experiments as well. Conclusions from single-text experiments cannot simply be generalized to other texts without further testing, because unknown or random variables in the original text may account for the reported effect (Jackson & Jacobs, 1983; Meuffels & van den Bergh, 2005). To establish whether the effect of motivational orientation on the persuasiveness of gain- and loss-frames goes beyond the

reported findings on dental flossing, demonstrations of the same effect in other texts are necessary (Hunter & Hamilton, 1998).

One study in which the interaction effect was replicated with different variables was done by Jeong et al. (2011). Participants in their experiment read four messages about university projects in need of funding, describing either the negative effects of non-funding ('the cafeteria will need to increase food prices') or the positive effects of funding ('the library will be able to expand the book collection'). They rated each message and divided an imaginary 20 dollars between the four projects, after which their BIS/BAS was measured. As hypothesized, participants rated the messages as more effective when the frame matched their motivation, and their alleged donation was higher for matched messages than for mismatched messages. It must be noted, however, that in this experiment too, the sample size was rather small (34 participants), and the distribution over cells rather skewed: 23 were classified as BAS and only 11 as BIS.

The small number of participants in all four studies above is a second concern with respect to the generalizability of the effect (Cohen, 1988). Especially in the cases where participants were distributed over experimental conditions unevenly, because more people had an approach orientation than an avoidance motivation, for instance, the results may have been distorted. In such cases, individual scores have a disproportionately large effect on the group average, meaning that just one or two participants who behave in line with the hypothesis may cause a 'false positive' result. The aim of this chapter therefore is to replicate the interaction effect of motivational orientation and gain- and loss-frames with a different target behaviour and more participants. The hypotheses are analogous to the ones in the studies described above:

H1: A message that emphasizes the desirable effects of exercising (gain-frame) is more persuasive than a message that emphasizes the undesirable effects of not exercising (loss-frame) for people with an approach motivation.

H2: A message that emphasizes the undesirable effects of not exercising (loss-frame) is more persuasive than a message that emphasizes the desirable effects of exercising (gain-frame) for people with an avoidance motivation.

2.2 Method

2.2.1 Material

The texts in this experiment described the health effects of physical exercise. Because the experiment ran in December, the text referred to people's new year's resolutions to exercise more. One version used gain-frames, the other

version used loss-frames. The number of words and the structure of the sentences was similar for both versions; each text consisted of 13 sentences and used 11 gain- or loss-frames. Table 2.1 shows an example of sentences from both versions of the text, translated from Dutch. See Appendix for the complete texts (in Dutch).

Table 2.1 Examples of gain- and loss-framed sentences used in the experimental text.

Gain	Loss
Below you will find a list of the advantages of exercising.	Below you will find a list of the disadvantages of not exercising.
Regular exercise brings about various mental and physical rewards.	Insufficient exercise brings about various mental and physical risks.
Exercising will make you feel energetic.	Not exercising will make you feel lethargic.
The start of the new year is an excellent opportunity to start new and healthy habits.	The start of the new year is an excellent opportunity to leave bad habits behind.

2.2.2 Measurements

Motivational orientation was measured with a Dutch translation of Carver and White's (1994) BIS/BAS Scales. The BAS scale consisted of 13 items (Cronbach's α= .79) like 'I'm always willing to try something new if I think it would be fun'. Participants responded on a 4-point scale, on which 1 indicated strong agreement and 4 strong disagreement. The BIS part of the scale consisted of 7 items (e.g. 'I worry about making mistakes'), two of which had to be dropped in the analyses to reach adequate reliability (Cronbach's α = .77).

Following the experimental text there were two questions to measure whether the manipulation of the frames had been successful: 'this text mostly focuses on…' followed by a 7-point answer scale with 1 = 'the disadvantages of not exercising' and 7 = 'the advantages of exercising', and 'the tone of this text is mostly…' 1 = 'negative', 7 = 'positive'.

The persuasiveness of the text was measured by participants' attitude and their intention to exercise. Intention was asked on a 7-point Likert scale: 'I intend to exercise (more) next year'. Attitude was measured by the phrase 'I think exercising is' followed by five semantic differentials (e.g. sensible-foolish, unnecessary-essential; Cronbach's α = .85). The appreciation of the text and its clarity were both measured with semantic differentials following the phrase 'I

think the text was'. Five semantic differentials measured the clarity (difficult-easy, complex-simple; Cronbach's α = .76), six measured appreciation (interesting-boring, tedious-vivid; Cronbach's α = .80).

The questionnaire concluded with asking participants' demographical information (gender, age, field of study) and how many hours per week they usually exercised.

2.2.3 Participants and procedure

People on campus were asked to participate and to fill out the questionnaire in exchange for a lottery ticket. A total of 201 people participated (115 men, 86 women), their age ranging from 18 to 31 (M = 22, SD = 2.73). Each participant received a booklet containing the BIS/BAS measurement, the experimental text (in one of two versions, randomly assigned), and the scales to measure the dependent variables.

2.3 Results

2.3.1 Preliminary checks

Between the experimental conditions there was no difference in participants' age, gender, or BIS/BAS. The manipulation of the frames had been successful: the tone of the gain-framed text was rated as more positive and more focused on advantages (M = 5.85, SD = 0.99) than the tone of the loss-framed text (M= 3.17, SD = 1.69), $F(1, 199) = 189.52$, $p < .001$, $\eta_p^2 = .49$.

2.3.2 Analyses

Motivational orientation was calculated by subtracting the mean BAS score from the mean BIS score for each participant. A positive score indicates a predominantly BIS motivation, a negative score a BAS motivation. For the subsequent analyses, participants with a score below 0 were classified as BAS (N = 53, i.e. 25.9% of the total sample). An equal number of participants on the higher end of the scores (average score > 0.69) was classified as BIS. See Table 2.2 for the scores on the dependent variables for both groups.

The hypotheses predicted an interaction effect between participants' motivational orientation and the frame of the message. To test the hypotheses, the data were analysed using a two-way (motivational orientation x framing) multivariate analysis, with the perceived clarity and appreciation of the text, the attitude towards exercising, and the intention to exercise as dependent variables. The predicted interaction effect was not found: Wilks' λ = .961, F (4, 99) = 1.01, p = .40. Univariate analyses showed no interaction effects either (all ps > .15).

Table 2.2 Means (and standard deviations) of the dependent variables for all four experimental conditions.

	BAS		BIS	
	Gain-frame	**Loss-frame**	**Gain-frame**	**Loss-frame**
	n = 24	**n = 29**	**n = 30**	**n = 23**
Manipulation check	5.85 (1.16)	3.13 (1.75)	5.87 (0.86)	3.98 (1.98)
Text clarity	6.45 (0.61)	5.93 (0.75)	6.02 (0.81)	5.81 (0.96)
Text appreciation	4.67 (0.76)	4.53 (0.99)	4.62 (0.96)	4.36 (0.91)
Exercise attitude	6.33 (0.57)	6.01 (0.96)	6.10 (0.79)	6.02 (1.00)
Exercise intention	4.71 (1.68)	3.93 (1.93)	4.87 (1.72)	5.17 (1.44)

There was no main multivariate effect of motivational orientation (Wilks' $\lambda = .924$, $F(4, 99) = 2.04$, $p = .10$), or framing (Wilks' $\lambda = .943$, $F(4, 99) = 1.48$, $p = .23$). The only significant univariate effects were a main effect of framing on the clarity of the text, in which the gain-framed text was rated as somewhat more clear ($M = 6.21$, $SD = 0.75$) than the loss-framed text ($M = 5.88$, $SD = 0.85$), $F(1, 102) = 5.478$, $p = .02$, $\eta_p^2 = .05$, and a main effect of motivational orientation on the intention to exercise: BIS oriented participants reported a slightly higher intention ($M = 5.00$, $SD = 1.60$) than BAS oriented participants ($M = 4.28$, $SD = 1.84$), $F(1, 102) = 4.37$, $p = .04$, $\eta_p^2 = .04$.

2.4 Discussion

2.4.1 Overview

The hypothesized interaction between the motivational orientation of the reader and the frame of the text was not found. It was expected that people with an avoidance motivation would be more susceptible to loss-frames and people with an approach motivation to gain-frames, but the data did not confirm these predictions.

As described in the introduction, the difference in persuasiveness between gain- and loss-framed messages has been the subject of a long-standing discussion. Although different hypotheses have been tested in a multitude of experiments, there is no conclusive answer to the question which frame is the more persuasive one. Several moderating variables have been proposed, including the type of health behaviour that is advocated in the message. There

are indications that gain-framed messages are more effective when encouraging prevention behaviours and loss-framed messages for detection behaviours, but this effect seems to be mainly due to experiments that investigated dental health or breast cancer detection behaviours (O'Keefe & Jensen, 2007, 2009).

Individual differences between readers, in this case differences in motivational orientation, are also hypothesized to be a possible moderator in the relation between framing and persuasion. If differences in personality alter the desirability of certain outcomes, an argument that uses these outcomes would be more or less persuasive depending on the person that reads it. More specifically, the relative strength of people's approach or avoidance motivation can be hypothesized to moderate their susceptibility for gain- and loss-frames. Although this interaction has indeed been found in previous research (Mann et al., 2004; Sherman et al., 2006; Updegraff et al., 2007), the experiment described in this chapter did not find any support for the hypothesis. The question remains, then, what caused the different outcome in this experiment.

2.4.2 Dental hygiene versus exercise

An obvious difference between the experiment in this chapter and the ones by Mann and colleagues is the behaviour that is targeted. Instead of dental flossing, the current messages dealt with exercise, and this difference may account for the different outcome of this experiment. It could be argued, for instance, that regular exercise (or the lack thereof) is a habit, whereas flossing will be a relatively new behaviour for most participants. Adopting a new behaviour is often a conscious decision, preceded by reflection or deliberation. Since habitual behaviour is not easily changed by communication alone (Verplanken & Wood, 2006; Wood, Tam, & Witt, 2005), it is plausible that participants in this experiment did not change their exercise behaviour because of one short message they read. The way the dependent variable was measured, however, accounts for this problem. Instead of measuring participants' real behaviour, they were asked whether or not they intended to change, and their attitudes towards the text and the behaviour were measured. It is unlikely that these answers were given in an unconscious and habitual manner. Measuring intention and attitude this way is in fact quite similar to the way Mann and colleagues measured participant's intention to floss, and would as such be similarly suitable to measure the hypothesized interaction.

There may be something special going on with dental hygiene as the targeted health behaviour. Not only in this example, also in O'Keefe and Jenssen's (2007) meta-analysis dental care differed from other health behaviours in that it induced effects where other behaviours did not. O'Keefe and Jenssen elaborate upon this difference in the discussion of their analysis, as an explanation of why

dental hygiene is the only prevention behaviour for which the advantage of gain-frames over loss-frames was found. Because the hypothesis about the difference between detection and prevention behaviour was based on prospect theory, the certainty of an outcome plays an important role in the process. People prefer certainty when facing gains, but uncertainty when facing losses (Kahneman & Tversky, 1979). O'Keefe and Jenssen theorize that dental hygiene is the only behaviour in their analysis for which the outcome pattern follows exactly this pattern: brushing and flossing one's teeth has a very likely chance of avoiding tooth decay (certain gain), whereas not brushing and flossing may or may not result in decay (uncertain loss). Therefore, encouraging flossing is best done in a gain-frame. For other prevention behaviours, like exercising, the uncertainty is equally large in both perspectives: exercising does not guarantee that one will stay healthy, and one can get a heart attack or stroke irrespective of exercise history. Because the uncertainty cannot be avoided, gain-frames in this case have no advantage over loss-frames. Hence, though both behaviours can be classified as prevention behaviours, they differ on another dimension that influences the outcome of framing experiments.

Differences in outcome (un)certainty may have also played a role in the results of the current experiment. Frames were hypothesized to alter the persuasiveness of the argument for people with different motivational orientations because of the desirability of the consequences of the advocated behaviour. But if the consequences are perceived to be highly uncertain, however desirable or undesirable they may be, matching the framing of the consequences to motivational orientation probably does not lead to a more persuasive argument. Future research in which the desirability and (un)certainty of a presumed outcome are manipulated separately could test this explanation.

2.5 Conclusion

Several explanations may account for the difference in results between the current experiment and those of Mann and colleagues (Mann et al., 2004; Sherman et al., 2006; Updegraff et al., 2007). It is beyond the scope of this chapter to test these options, and beyond the aim of this thesis to solve the question if and when gain- and loss-frames differ in persuasiveness. What this chapter has made clear is the importance of diversity: results from single text experiments, even if they are replicated three times, cannot be generalized to universally applicable conclusions (Hunter & Hamilton, 1998; Jackson & Jacobs, 1983; Meuffels & van den Bergh, 2005) without testing other implementations of hypothesized effect. Matching the frame of a message to a reader's approach or

avoidance motivation may work when encouraging dental hygiene, but it does not seem to work when encouraging exercising. Until the conditions under which the matching of frames to motivational orientation increases persuasiveness are clear, it is not a useful strategy to create tailored health messages.

Appendix: Experimental texts (in Dutch)

Gain version:

Iedereen weet dat het gezond is om te sporten, maar toch weet niet iedereen de weg naar de sportschool of sportvereniging te vinden. Zie hieronder wat de voordelen zijn van voldoende bewegen. Voldoende bewegen brengt namelijk zowel mentale als fysieke beloningen met zich mee:

- Door te sporten voel je je vitaler
- Je bent minder vatbaar voor hart- en vaataandoeningen
- Bij voldoende lichaamsbeweging verbetert je conditie
- Door te sporten blijf je gemakkelijker op gewicht
- Je ziet er beter uit en krijgt een fitte uitstraling
- Door sporten wordt je lichaam soepel
- Je hebt de kans om (nieuwe) mensen te leren kennen
- Door te sporten gun je jezelf dat heerlijk voldane gevoel

De start van het nieuwe jaar is een goed moment om positieve initiatieven te starten. Zorg er dus voor dat ook jij in 2011 voldoende beweegt!

Loss version:

Iedereen weet dat het gezond is om te sporten, maar toch weet niet iedereen de weg naar de sportschool of sportvereniging te vinden. Zie hieronder wat de nadelen zijn van onvoldoende bewegen. Onvoldoende bewegen brengt namelijk zowel mentale als fysieke gevaren met zich mee:

- Door niet te sporten voel je je futloos
- Je bent meer vatbaar voor hart- en vaataandoeningen
- Bij onvoldoende lichaamsbeweging verslechtert je conditie
- Door niet te sporten vergroot je de kans op overgewicht
- Je ziet er slechter uit en mist een fitte uitstraling
- Door niet sporten wordt je lichaam stram
- Je mist een kans om (nieuwe) mensen te leren kennen
- Door niet te sporten misgun je jezelf dat heerlijk voldane gevoel

De start van het nieuwe jaar is een goed moment om slechte gewoontes achter je te laten. Zorg er dus voor dat ook jij in 2011 genoeg beweegt!

3

SOCIAL NORMS AND SELF-MONITORING

3.1 Introduction

3.1.1 Social influence

The previous chapter described how the desirability of the consequences of behaviour can affect people's choices. Most of the things we do in daily life, however, are not based on reflective thoughts about the consequences but are responses to stimuli in our environment. Sometimes those stimuli are easily recognizable as the cause for our behaviour, like when the smell of freshly baked bread causes the irresistible urge to eat it. At other moments the effects of the environment are more subtle and steer us without us being consciously aware of their influence. The behaviour of other people around us is one of those subtle environmental cues: we imitate or adapt our behaviour to the people around us, without consciously deciding to do so (Cialdini & Goldstein, 2004).

Because people tend to adapt their behaviour to what other people do, referring to others can be a powerful tool in persuasive communication. Telling hotel guests that the majority of their fellow guests participated in a program to re-use their towels, for example, makes it more likely that they will re-use their towels too, compared to asking them to do so in order to protect the environment (Goldstein, Cialdini, & Griskevicius, 2008). Even if the norm describes undesirable behaviour, like stealing or littering, people tend to do what 'everybody else' does (Cialdini, 2003; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007).

These effects may seem counterintuitive, because protecting the environment seems to be a better reason to take environmentally friendly measures than the fact that most other people do it too. This is also reflected in people's own beliefs about the causes of their behaviour. When asked why they would try to save energy, people in a large-scale survey reported that they would do so in order to protect the environment, or to benefit the society (Nolan, Schultz, Cialdini, Goldstein, & Griskevicius, 2008). Saving energy because others did so was rated as the least important factor by the respondents. Yet, when in a subsequent field experiment Nolan and colleagues tested the actual effect of different messages, the behaviour of people showed a different pattern: people who were asked to join their neighbours in conserving energy were more likely to do so than people who were asked to conserve energy to protect the environment or to save money. Although they again reported that the messages containing the social norm was less motivating than the messages containing the rational arguments, the readings from their electricity meters and bills showed that their actual energy consumption was lower after reading that 77% of the people in their neighbourhood also tried to conserve energy (Nolan et al., 2008). This unconscious tendency to follow the example of others is the result of the 'principle of social proof': when many people perform the same behaviour, we automatically assume they are right (Cialdini, 2001).

It is interesting to note that these descriptive social norms do not include any information about how other people think about the behaviour, or whether they consider it to be 'right' or 'wrong', but only information about how other people behave. When the norm contains information about others' approval or disapproval it becomes an injunctive norm instead of a descriptive norm. Injunctive norms do not describe what other people do, but what other people think is the right thing to do (Cialdini, Reno, & Kallgren, 1990; Lapinski & Rimal, 2005).

There are indications that the effect of descriptive social norms can be moderated by several factors involving the behaviour in question, and by individual differences. The perceived benefits of the behaviour, for example, can increase or diminish the effect of a social norm. When reading about yoga exercises, participants who thought that yoga had considerable positive effects on the body had more positive intentions to practise yoga when the descriptive social norm was high; for participants who thought that yoga was not particularly beneficial for the body, on the other hand, the social norm had no effect on their intentions (Rimal, Lapinski, Cook, & Real, 2005).

In the light of tailored health communication, it is interesting to test whether individual differences in personality can also predict people's susceptibility to social norms. If the effect of social norms is also moderated by personality characteristics, health messages can be tailored to contain social norms for those who are influenced by them, and leave the norms out for people who are not sensitive to other people's behaviour. For people with a high susceptibility to normative information, adding a simple description of other people performing the desired behaviour would increase the persuasiveness of the message. In this chapter, self-monitoring is hypothesized to predict to what degree people are susceptible to social norms.

3.1.2 Differences in norm-susceptibility

Self-monitoring is the degree to which people relate their behaviour to that of others, and has been defined as 'self-observation and self-control guided by situational cues to social appropriateness' (M. Snyder, 1974, p. 526). Important characteristics of high self-monitors are, amongst other things, being concerned with the situational appropriateness of their actions and being sensitive to subtle cues by which others indicate what actions are appropriate. Strong self-monitors are therefore constantly monitoring their own behaviour in comparison to that of the people around them, and adapting it if necessary. Low self-monitors, on the other hand, act upon their own attitudes or preferences, without noticing nor caring about how their behaviour matches with other people around them (Gangestad & Snyder, 2000; M. Snyder, 1974).

Differences in self-monitoring have been shown to influence people's reaction to persuasive communication. DeBono (1987), for instance, demonstrated that high self-monitors changed their attitude about the treatment of mentally ill patients after listening to a message that described how other people thought about the topic. Low self-monitors, on the other hand, were more influenced by a message that focussed on personal values and attitudes, and less by the attitudes of others. In another experiment, DeBono and Omoto (1993) showed that high self-monitors had higher intentions to write a letter for a political campaign when they felt a social pressure to do so (injunctive social norm), whereas low self-monitors' intentions depended on their own attitude.

The effect of descriptive norm information in a message may also be stronger for high self-monitoring people than for low self-monitors. A descriptive social norm can function as a cue as to what is appropriate behaviour for high self-monitors, even without explicitly referring to the injunctive norm. Low self-monitors, on the other hand, will probably be less affected by the description of what other people do.

This hypothesis has recently been tested in a sample of Korean and American university students. Jang (2011) measured students' perceived norm on drinking, their self-monitoring, and their drinking behaviour and intentions. The moderating role of self-monitoring turned out to be opposite to the hypothesized one: low self-monitors were more likely to be guided by normative information than high self-monitors, for both Korean as well as American students. Before any strong conclusions can be drawn from these results, however, it is important to take into account the alternative explanations for these findings. A limitation of Jang's study is the use of self-report measures for both the social norm and the intentions and behaviour of the participants. In both experiments participants were asked to estimate how much alcohol their friends drank; this measure of the social norm was then used as an independent variable in the subsequent analyses. It is very well possible that this perceived norm was biased and that this bias was related to participants' self-monitoring[1]. High self-monitors, who are sensitive to the behaviour of others, might have based their estimation of their friends' drinking behaviour on actual observation. Low self-monitors, who do pay less attention to others' behaviour, might have based their estimation on their own standards (the false consensus effect, see Ross, Greene, & House, 1977). Jang's finding that low self-monitors' intentions are in line with the social norm can thus be explained the other way around: their perceived social norm was probably based on their own behaviour.

1 This explanation is supported by the observation that the perceived norm and self-monitoring scores are significant correlated in Jang's experiment 1. Apparently, participants' impression of their friends' drinking behaviour was related to their personal self-monitoring score.

Moreover, a similar problem may apply to the dependent variable in Jang's experiments: participants reported their alcohol consumption in de past 6 months and their estimate for the next 6 months. Given that high self-monitors care about their image, it is not unlikely that their answers were biased to uphold a socially desirable image, obscuring any effects of the perceived social norm.

3.1.3 Aim and hypothesis

To test the tenability of Jang's findings, it is important to replicate or refute the effects using a different methodology. In this chapter I test an analogous hypothesis with a similar design. To avoid the problems of self-reported behaviour or intentions, the dependent variable consists of an easy to observe behaviour: participant's choice for either the stairs or the elevator to go to another floor in a building. Moreover, the descriptive social norm is manipulated instead of measured, by telling participants how many of their peers use the stairs instead of the elevator as a way of getting enough physical exercise. High self-monitors are hypothesized to be guided by this norm, whereas low self-monitors are not.

Hypothesis: When reading a message containing a social norm, high self-monitors will be more likely than low self-monitors to adapt their behaviour to that norm.

3.2 Experiment 1 - Method

3.2.1 Material

Participants in this experiment read two short text on different health topics. The first one was a filler text to disguise the real topic of the experiment, and contained a short description (71 words) of the health benefits of eating fibres, including a short list of fibre-rich foods. The second one was the experimental message: a short text (73 words) on the benefits of regular physical effort, including advice on how to include more physical exercise in one's daily life:

> *Sufficient physical exercise is important for your health. It decreases the risk of cardiovascular diseases, diabetes, and depression. But how can you make sure you get enough exercise? Should you go to the gym or join a sports team? You don't have to: daily life provides you with plenty opportunities to get some exercise. Use the bicycle instead of the bus or car to go to the university. A recent poll showed that almost half of the students (49%) mostly come by bike. Or use the stairs instead of the elevator to get to another floor. A majority (74%) of the students do this regularly. With strategies like these, you can make sure you stay fit.*

There were two versions of this text (see Appendix for the Dutch version), which were identical except for one sentence that included a social norm. In one version it read 'You could also take the stairs instead of the elevator to go to another floor. A majority (74%) of the students do this regularly', while the other version said that 'a minority (26%) of the students do this regularly'.

3.2.2 Measures

To measure self-monitoring I made a Dutch translation of Lennox and Wolfe's (1984) Concern for Appropriateness scale. This scale measures cross-situational variability (7 items, Cronbach's α = .82) and attention to social comparison information (13 items, α = .76). The total scale consisted of 20 items (α = .78) like 'different situations can make me behave like very different people' and 'I try to pay attention to the reaction of others to my behaviour in order to avoid being out of place' that were rated on a 6-point scale (1 = 'totally disagree', 6 = 'totally agree').[2]

Participants were asked to rate the experimental text on ten 7-point semantic differential scales, to measure the clarity (difficult-easy, simple-complicated, vague-clear, and concise-lengthy; α = .73) and appreciation (interesting-not interesting, detached-appealing, reserved-attractive, fascinating-boring, personal-not personal, monotonous-diverse; α = .84) of the text.

3.2.3 Participants

Initially, 196 undergraduate students took part in this experiment, in exchange for a lottery ticket. Participants who suspected the real purpose of the study (*N* = 22), who encountered technical problems with the elevator (*N* = 3), or who waited for other participants to use the elevator or walk the stairs together instead of alone (*N* = 48) were excluded from the analyses, leaving a total sample of 123 participants (66% female) with a mean age of 21 years (*SD* = 3.49).

3.2.4 Procedure

Participants came to the 5th floor of a 20-floor building on campus, where they were seated and instructed to complete the first part of the experiment. This part consisted of filling out the self-monitoring measurement, reading the texts,

2 A Confirmatory Factor Analysis showed that one item from the second subscale loaded on the first subscale, slightly reducing the reliability of the second subscale. Thorough scrutiny of that specific item (item 5: 'At parties I usually try to behave in a manner that makes me fit in') suggested that the Dutch translation might have caused a slight change in meaning, making it more applicable to the other subscale. This did not affect the reliability of the Self-Monitoring scale as a whole, so I chose to analyze the data with item 5 included. Excluding the item did not change the results of any of the subsequent analysis. The same applies to experiment 2, in which the same scale was used.

and answering the questions about these texts. Upon completing this part, the questionnaire ended with the instruction to go to the 8th floor of the same building, because the remainder of the experiment would take place in another room 'for practical reasons'.

On the 8th floor, participants were welcomed by a research assistant who unobtrusively noted if the participant had taken the elevator or the stairs, and who brought the participant to a room for the remainder of the experiment. To disguise the real topic of the study, participants were faced with a surprise recall task in which they had to list the fibre-rich foods from the filler text as the second part of the experiment. After that, they answered the demographical questions and were asked about their suspicions about the goal of the experiment.

3.3 Results

3.3.1 Preliminary checks

There were no differences in self-monitoring, age, or gender between participants who had read the minority versus the majority text version.

3.3.2 Main analyses

Less than half of the participants in the total sample (41.5%) used the stairs to go to the second room; the rest (57.7%) used the elevator. The behaviour of one person (0.8%) was not observed. Table 3.1 shows the number (and percentage) of participants using the stairs and elevator per text version. The elevator was used more often than the stairs, and this was not related to the text version, $\chi^2(1) = 0.11$, $p = .74$.

One-way ANOVA's showed that the text version had no effect on participants' rating of the clarity (majority $M = 5.75$, $SD = 0.93$, minority $M = 5.80$, $SD = 0.94$, $F(1,121) = 0.08$, $p = .78$) nor their appreciation (majority $M = 4.68$, $SD = 1.01$, minority $M = 4.64$, $SD = 1.06$, $F(1,121) = 0.04$, $p = .84$) of the text.

Binary logistic regression was used to test the main hypothesis, with dummy variables for the quantitative variables (i.e. text version and behaviour). To analyse the interaction between participants' self-monitoring score and the effect of text version, a product variable was created by multiplying the self-monitor score by the dummy-coded text version score (0 for the majority version, 1 for the minority version). Text version, self-monitor score, and the interaction term were then regressed on behaviour.

The overall fit of the model was non-significant, $\chi^2(3) = 0.25$, $p = .97$, meaning that, contrary to the hypothesis, participants' choice for the elevator versus the stairs was not predicted by the text they had read, their self-monitoring score,

Table 3.1 Number (and percentage) of participants who used the stairs or the elevator for both text versions.

		Behaviour	
		Stairs	**Elevator**
Text version	Majority	26 (43%)	34 (57%)
	Minority	25 (40%)	37 (60%)
	Total	51 (42%)	71 (58%)

and the interaction between these variables. Inspection of the B-values confirmed that none of the predictors had a significant effect on the outcome (all *p*s > .75).

3.3.3 Alternative analyses

Additionally, alternative statistical analyses were used to get a more exhaustive overview of the results. Categorizing participants as being either low (score < 3.00) or a high (score > 3.45) in self-monitoring, based on the 33 and 66% percentile scores, allowed for a three-way loglinear analysis. This analysis revealed no significant interaction effects between any of the factors (self-monitoring, text version, and behaviour) either. The expected three-way interaction did not approach significance, $\chi^2(1) = 0.01$, $p = .93$. After backward elimination of all non-significant effects, only a main effect for behaviour remained ($\chi^2(1) = 4.09$, $p = .043$). This main effect indicates that that significantly more people used the elevator than the stairs, as can be seen in Table 3.1.

If a median split was used instead of the highest and lowest 33% (to avoid the loss of power that occurs in the previous analysis), the three-way interaction still did not reach significance: $\chi^2(1) = 0.25$, $p = .62$. Selecting only participants with an extreme self-monitoring score (i.e. the lowest and highest 20%) did not change the results either, $\chi^2(1) = 0.03$, $p = .87$.

Evidently, the hypothesis was not confirmed: the message did not have different effects for high versus low self-monitors.

3.4 Discussion

The hypothesis that a message with a social norm would be more effective for high self-monitoring people than for low self-monitors could not be confirmed. Participants' choices for either the stairs or the elevator were unrelated to their self-monitoring, the described social norm, or the interaction between those two.

Before it can be concluded that self-monitoring had no effect on the reaction to social norms, two alternative explanations must be ruled out. The first one is that the manipulation was too subtle, as a result of which participants did not notice the social norm, or that they did notice but did not believe it. The second alternative explanation is that using the stairs or elevator is a habit for most students who visit the same building regularly, and that their (automatic) behaviour was therefore not influenced by reading a short text (Verplanken & Wood, 2006). It is possible that participants did change their attitudes towards taking the stairs, and perhaps even their intentions, but that this did not lead to an actual change in their behaviour because they used either the stairs or the elevator by force of habit. To test both explanations, the experiment was repeated with different dependent variables.

3.5 Experiment 2 - Method

3.5.1 Material and Measures

The self-monitoring scale, texts and questions about the texts were the same as in experiment 1, and the reliabilities of the scales were comparable (Cronbach's α for the self-monitoring scale was .79, for text clarity .74, and for text appreciation .83). In addition to these questions, participants were asked about their attitudes and intentions. Immediately after evaluating the text, at the moment that participants in the first experiment were asked to move to the 8th floor, participants in the second experiment were asked if they would use the stairs or the elevator if they had to go up three floors at that moment, and answered on a six-point scale from 1 'I would certainly take the stairs' to 6, 'I would certainly take the elevator'.

Attitudes towards using the stairs were measured on five 6-point semantic differential scales (harmful-beneficial, uncomfortable-comfortable, bad-good, unimportant-important, not nice-nice, $\alpha = .71$). The last question checked whether the manipulation was noticed and believed: 'how many of your fellow students regularly take the stairs instead of the elevator?' (1 = 'almost none', 6 = 'almost everyone').

3.5.2 Participants

As part of an introductory statistics lecture, 127 university freshmen participated in this experiment. The answers from one participant were excluded from the analysis, because she was in a wheelchair and could therefore not use the stairs. The final sample consisted of 126 participants (69% female) with a mean age of 21 years (SD = 3.08).

3.5.3 Procedure

After a short introduction about the experiment, in which participants' anonymity was emphasized, questionnaires were handed out to all students attending the lecture. The questionnaire was mostly identical to the one in experiment 1, and consisted of the self-monitoring scale, the filler text, the text of interest (with either a majority or a minority norm), and ended with the questions about the text, about attitudes towards using the stairs, and the demographics of the participants. After all questionnaires were handed in, participants were fully debriefed about the experiment and thanked for their participation.

3.6 Results

3.6.1 Preliminary checks

There were no differences in participant's self-monitoring, age, or gender between the two text versions.

A one-way ANOVA showed that participants in the minority condition indeed believed that fewer of their fellow students (M = 2.66, SD = 1.23) regularly used the stairs than participants in the majority condition (M = 3.16, SD = 1.16), $F(1,126) = 2.57$, $p = .02$, $\eta_p^2 = .04$, implying that the manipulation of the texts had been successful.

To the question whether they would now use the stairs or the elevator, most participants (68.2%) answered that they would use the elevator (answering 4, 5, or 6 on the 6-point scale), which is comparable to the percentage of participants who actually used the elevator in experiment 1.

3.6.2 Analyses

Linear regression was used to test the main hypothesis, with a dummy variable for text version and a product variable (text version * self-monitoring) for the interaction. All three predictors were regressed on the reported intention to use the elevator, the attitude towards using the stairs, the appreciation of the text, and the clarity of the text. Table 3.2 shows the coefficients and p-values for all regression analyses.

Table 3.2 Linear regression analyses predicting participant's attitudes and intentions from the different text versions, self-monitoring (SM), and the interaction between these two.

Outcome	R^2	F	p	Predictor	B	SE B	Beta	p
Intention elevator	0.03	1.20	.31	Text version	0.68	1.74	.22	.70
				SM	0.58	0.37	.19	.12
				Text version x SM	-0.17	0.55	-.17	.76
Attitude stairs	0.04	1.60	.19	Text version	-0.02	0.84	-.02	.98
				SM	-0.29	0.18	-.20	.11
				Text version x SM	0.01	0.26	.02	.97
Text clarity	0.01	0.58	.63	Text version	0.15	1.01	.08	.88
				SM	-0.05	0.21	-.03	.82
				Text version x SM	-0.11	0.32	-.19	.73
Text appreciation	0.02	0.96	.42	Text version	-1.31	0.94	-.78	.17
				SM	-0.11	0.20	-.07	.58
				Text version x SM	0.45	0.30	.83	.14

Contrary to the hypothesis, but in line with experiment 1, there was no effect of text version, self-monitoring, or the interaction on any of the dependent variables. As in experiment 1, additional analyses showed that choosing alternative approaches did not change these results. Classifying participants as high or low self-monitors (resp. scores above 3.40 and below 2.95) based on the 66% and 33% percentile scores or using a median split to preserve power allowed testing the hypothesis in simple 2 x 2 analyses of variance, but the means did not even show a trend in the predicted direction.

A two-way ANOVA with self-monitoring (lowest 33%, highest 33%) and text version (majority, minority) as independent variables and the intention to use the stairs (continuous) as dependent variable showed no main- or interaction effects, all *F*s < 1. The same analysis, but with attitude towards the stairs as dependent variable, showed no interaction effects either, $F < 1$, only a marginally significant main effect of self-monitoring: participants who scored low on self-monitoring had a somewhat more positive attitude towards the stairs ($M = 4.40$, $SD = 0.84$) than participants scoring high on self-monitoring ($M = 4.09$, $SD = 0.78$), $F(1,87) = 3.62$, $p = .06$, $\eta_p^2 = .04$ but this was unrelated to the text version they had read.

3.7 Discussion

3.7.1 Overview

In two experiments I found no effect of social norms on people's choice for the stairs or the elevator, irrespective of their self-monitoring. Reading that either the majority or the minority of their peer group used the stairs did not affect people's behaviour, their intentions, or even their attitude towards using the stairs.

The manipulation check in experiment 2 showed that the texts succeeded in changing participants' beliefs about how many fellow students used the stairs. It is therefore unlikely that the lack of effects was the result of methodological problems manipulating the independent variable. It should also be noted that the dependent variable was operationalized in multiple ways: by measuring spontaneous behaviour, conscious intentions, and explicit attitudes. All three of these measures showed the same consistent pattern, implying that they form a meaningful result instead of a random fluctuation. I therefore want to elaborate on these findings, because I believe they provide interesting information even though the hypothesized effects were not found.

3.7.2 Social versus individual benefits

A possible explanation for the lack of effect of social norms, which is at odds with previous research, might be found in the type of behaviour in this study. Most research on social norms focuses on behaviour that has a social component: it has social consequences, or is only effective when performed by a great many people. Saving energy or protecting the environment, for example, provides no direct personal benefits, and only works out when numerous people participate. One person re-using his towel in a hotel does not save one drop of water on his own, but many people together can make a difference. In these situations it is important to know whether the other group members do or do not take part in the behaviour. The social norm, in these cases, contains relevant information to base one's own behaviour on. The behaviour in the current study, on the other hand, was framed in terms of efforts and benefits for the reader of the text only. Using the stairs improves the reader's own health and physical condition. There is no group benefit to be gained, nor is it important that multiple people collaborate to reach a goal. This could explain why the social norm had no effect on people's behaviour in our study: the personal nature of the behaviour made the social norm an irrelevant source of information.

There is recent research, however, that shows that behaviour with personal benefits can be influenced by social norms under specific conditions. Yun and Silk (2011) demonstrated that college students intended to exercise when they believed that most of their friends exercised too. In contrast, their intentions to

exercise were not related to how many of their anonymous fellow students exercised. Yun and Silk argue that the referral group is important for the effectiveness of social norms: the behaviour of proximal peers (i.e. friends) has more influence than the behaviour of distal peers (i.e. the average college student). In my study, referral groups were distal in both experiments, which may account for the absence of effect of the social norm.

It should be noted, on the other hand, that referring to a distal group of anonymous others has frequently been shown to be effective in previous research. In their towel re-use experiments, for example, Goldstein et al. (2008) found that just referring to 'your fellow guests' (a distal group comparable to fellow students) made people more inclined to re-use their towels. Again, the explanation for the differences in results of social norms from distal peers might be found in the different kinds of behaviour in those experiments. As in my experiments, Yun and Silk used behaviour that has only personal benefits (exercising), whereas Goldstein et al. looked at behaviour that has a social component (saving energy). This comparison suggests that distal group norms can influence behaviour which has social consequences and which benefits from group efforts, while proximal group norms are necessary to change personally beneficial behaviour. More research is needed to test this explanation and explore the interaction effects between norm group proximity and the personal or social focus of the behaviour in question. An experiment manipulating both the norm group proximity (friend versus strangers) and the benefits of the described behaviour (private versus social), for example, would enable the effect of both factors and their interaction to be measured.

Besides the ineffectiveness of social norms, I also found no effect of self-monitoring. Not in the direction of the hypothesis, but also not in line with the reversed effect that Jang (2011) found. Although this finding is unexpected, it is similar to the results of Yun and Silk (2011). They, too, hypothesized that attention to social comparison information (a sub-scale of Lennox and Wolfe's self-monitoring scale) would moderate the effect of social norms, but found no support for this hypothesis. As in the discussion on social norms in the previous paragraph, the type of behaviour might play a role in these findings. In both my and Yun and Silk's experiments, the behaviour in question had no social implications. As with social norms, self-monitoring probably plays a less important role in behaviour that has no social component or social effects.

3.8 Conclusion

More research is essential to understand the interplay between the type of behaviour, self-monitoring, and the effect of different kinds of social norms. Before social norms and self-monitoring can be used in tailored health communication, it is crucial to know exactly under which circumstances these strategies may or may not yield the desired effect.

Appendix: Experimental text (in Dutch)

Voldoende bewegen is belangrijk voor je gezondheid. Het verkleint de kans op hart-aandoeningen, diabetes en depressies. Maar hoe zorg je ervoor dat je genoeg beweegt? Moet je dan echt naar de sportschool of het hockeyveld? Dat hoeft niet: ook het leven van alledag biedt genoeg mogelijkheden om te bewegen. Pak de fiets naar de universiteit in plaats van de bus of de auto. Uit een recent onderzoek bleek dat bijna de helft (49%) van de studenten meestal met de fiets komt. Of pak de trap in plaats van de lift om naar een andere verdieping te komen. De meerderheid (74%) / minderheid (26%) van de studenten doet dit regelmatig. Ook daarmee kun je ervoor zorgen dat je lichaam in een goede conditie blijft.

4

CONCRETENESS AND NEED FOR CLOSURE

4.1 Introduction

4.1.1 Lexical Concreteness

In the two previous chapters it was hypothesized that a message would be more persuasive when the content of the message was matched to the 'right' receiver. While the different versions of messages within each experiment had the same objective, they differed in the information they conveyed. In chapter 2, the messages differed in the frame that was used to describe the consequences of health behaviour: one version used loss-frames and the other used gain-frames. In chapter 3, the messages referred to either the majority of minority of peers who displayed the desired health behaviour.

In the current chapter and the next one the focus is not on differences in the information given, but on the way this information is formulated: the style, or tone, of the message. When emphasizing the beneficial effects of exercise, for instance, a message could state that 'exercising will improve your bodily condition and emotional wellbeing', but it could also say that 'exercising will increase your lung capacity and help you deal with stress.' The first version uses an abstract and general description of the positive effects ('improve your condition'), whereas the second version uses a concrete and specific example ('increase your lung capacity'). The aim of the current chapter is to test whether this difference in style leads to a difference in persuasiveness, and whether this effect is moderated by personality characteristics of the recipient.

The exact definition and use of concrete and abstract language varies between different lines of research, especially so between research from a linguistic versus a psychological perspective. In social psychology, for instance, the linguistic category model (Semin & Fiedler, 1991) describes how people's perception of social relations is reflected in their choice for abstract or concrete words to describe an action. The same action can be described in a concrete, specific way (for instance 'John hits someone'), or in an abstract, generalized way (for instance 'John is aggressive'). According to the linguistic category model, people use the concrete words when the action is uncommon or unexpected (e.g. because John is a priest, and priests generally do not hit other people), and use abstract words when the action is expected or 'normal' (e.g. because John is a hooligan, and hooligans regularly fight). In linguistics, on the other hand, the concreteness of language is studied in its relation with mental representations. Concrete words like 'apple' are easier to visualize and will therefore be encoded differently in the brain than abstract words like 'freedom' (Paivio, 1991; Sadoski, Goetz, & Fritz, 1993).

In this chapter I closely follow the experimental setup of Miller and colleagues (Miller, Lane, Deatrick, Young, & Potts, 2007, see below), and therefore

use their definition of concretely and abstractly worded messages: 'Concreteness refers to how specific and particular a message is, or the extent to which a message details the information needed by the reader. Abstractness, on the other hand, conveys less precise information, requires more inference, and gives receivers more latitude for interpretation' (Miller et al., 2007, p. 225-226).

The advantage of general messages is that they are applicable to a wide selection of people, whereas concrete examples can be irrelevant to a big part of the audience. For example, the advice to 'get more active in daily life' (abstract) can be interpreted by everyone in a way that fits him or her best, while 'walk the dog for 30 minutes each day' (concrete) is a useful tip for the smaller subgroup of dog owners only. The advantage of concrete language, on the other hand, is that it is easier to understand because it leaves little doubt about the meaning and intention of the message. Miller et al. (2007) provided participants with messages about exercising that were either concrete ('Why not exercise to both burn calories and reduce your risk of breaking bones during falls? […] You might think about taking the stairs more often instead of the elevator') or abstract ('Why not exercise, both to stay in condition and to gain strength and vigour? […] You might think about trying to find other ways to be more active in your daily routine', p. 239), and measured people's attitude towards the message and towards exercising. The results were all in favour of the concrete message: it was evaluated more positively, resulted in a more positive attitude towards the message's source, and led to a more positive attitude and intention to exercise than the abstract message.

Analogous to abstract and concrete language, O'Keefe (1997, 2002) differentiates between general and specific argumentation. When advocating a certain standpoint, a writer or speaker can choose to give either a specific and detailed or a general and broad description of the recommended action. In a meta-analysis of 18 studies, O'Keefe (2002) tested which strategy was more persuasive, and concluded that 'messages with more detailed, specific descriptions of the recommended action are significantly more persuasive than those providing more general, nonspecific descriptions' (p. 76). Although his analysis mainly focused on the specificity of conclusions, and not of the message as a whole, the results are in line with the findings of Miller et al. (2007), and suggest that, in general, concrete language is more persuasive than abstract language.

O'Keefe (2002) speculates that concrete language is more persuasive because it facilitates the step from language to action: A specific example makes it easier to imagine performing the action, and can thereby increase the belief that someone is capable of performing the action themselves, leading to stronger intentions to do so (self-efficacy theory, see Bandura, 1977). The effect of language concreteness has indeed often been studied in the context of vividness

(Hosman, 2002), where concreteness is seen as one of the ways to make language more vivid. Concrete words, as well as emotional language and use of detail, are thought to elicit more images in listeners or readers. As a result, the words are processed and encoded differently from abstract words, which are harder to visualize, leading to better comprehension and recall (Sadoski et al., 1993).

4.1.2 Mindsets and personality

Although the effects described above seem to demonstrate that concrete language generally outperforms abstract language when it comes to persuasion, there are also indications that personal and situational variables can strengthen or weaken this effect. Hansen and Wänke (2010), for instance, demonstrated that sentences in concrete language were judged as more likely to be true, but that this effect was moderated by characteristics of the participants and the task itself. Half of the participants were primed beforehand with a task that induced an abstract mindset, by asking them to think about 'why'-questions, while the other half were primed with a concrete mindset by thinking about 'how'-questions. When judging the sentences, especially participants in a concrete mindset thought that the concrete sentences were more likely true. Similarly, when the sentences were presented in a proximal (versus a distal) location, concrete sentences were seen as more truthful than abstract sentences (Hansen & Wänke, 2010). These findings indicate that especially when people think about the here-and-now, concrete language has an advantage over abstract language.

Also people's goal-pursuing mindset interacts with the effect of concreteness. When people have a promotion focus, in which they are looking for opportunities for success and eager to fulfil their goals, they process information on a more abstract, higher-order level. In a prevention focus, when they are vigilant to failure, people process information on a more concrete and lower-order level (Lee, Keller, & Sternthal, 2010). Not only in information processing, also in language preference the relation between mindset and language is visible. People in an eager promotion focus are more amenable to abstract language, and people in a vigilant prevention focus prefer concrete language (Semin, Higgins, de Montes, Estourget, & Valencia, 2005).

In the studies described above, the mindset of the participants was temporarily induced either by priming or by characteristics of the task itself. To create messages in which the concreteness of the language is tailored to an individual receiver, however, a more stable feature would be preferred. As in the previous chapters, I therefore look for a personality trait that can be used to match the messages to. In the case of concrete language, the moderating personality trait may be people's need for closure (Webster & Kruglanski, 1994),

because the need for closure reflects how (un)comfortable someone is with ambiguity. People with a high need for closure have a low tolerance for uncertainty: they value clarity and closure over ambiguity and variability. People with a low need for closure, on the other hand, have no problems with vagueness or uncertainty.

The relation between the persuasiveness of concrete language and need for closure has not been investigated before directly, but results on interpersonal communication and need for closure suggest a possible moderating link. When people were asked to describe complex arbitrary line-drawings, those high in need for closure did so in a more concrete way (Richter & Kruglanski, 1999). Participants with a low need for closure would for instance describe a drawing in abstract geometrical terms, like 'a triangle with circles', while participants with a high need for closure used figurative labels like 'it looks a bit like an ice-cone'. Although the experiment of Richter and Kruglanski was designed to demonstrate the effect of need for closure on the way people adapt their descriptions to the shared knowledge of their communication partner, the results also suggest that people with a high (versus low) need for closure prefer concrete descriptions and simple labels over abstract and broad descriptions. It can therefore be expected that the greater persuasiveness of concrete language is especially true for people with a high need for closure.

4.1.3 Aim and hypothesis

The results of the research on concrete language indicate that using concrete, specific language is more effective in persuading people than using abstract or general language (Miller et al., 2007; O'Keefe, 1997, 2002). In those studies, however, results were limited to evaluative measures and did not include an observation of real behaviour. Especially because the goal of most health communication is to cause a change in people's actual behaviour, instead of for example a change in opinion, it is important to understand the effects of communication strategies in terms of actual behavioural effects (for a similar argument see also Baumeister, Vohs, & Funder, 2007). Besides testing the possible moderating effect of need for closure, I therefore also aim to replicate the above mentioned effects with a behavioural measure: the use of the stairs instead of the elevator.

H1: A message using concrete language will be evaluated more positively, and will be more likely to lead to the advocated behaviour, than a message using abstract language.

H2: This effect will be moderated by need for closure: concrete (versus abstract) messages will be especially persuasive for people with a high (versus low) need for closure.

4.2 Experiment 1 – Method

4.2.1 Material

As in chapter 3, participants in this experiment read two short texts on different health topics. The first one was a filler text to disguise the real topic of the experiment, and contained a short description (71 words) of the health benefits of eating fibres, including a short list of fibre-rich foods. The second one was the experimental message: a short text (73 words) on the benefits of regular physical effort, including advice on how to include more physical exercise in one's daily life. The text was similar to the one in chapter 3, but it was re-written so that one version used concrete descriptions while in the other condition the descriptions were more abstract. See Table 4.1 for example sentences from both versions, and see Appendix for the complete text (in Dutch). There were five phrases in each text that were manipulated to be more concrete or abstract than the other text. Both the description of the benefits of exercise and the description of the exercise options itself were manipulated to be more concrete or abstract. The use of the stairs instead of the elevator was not mentioned in the texts, because it would be too concrete for the abstract version, and would lead to a confounding factor if used only in the concrete version.

Table 4.1 Example sentences using concrete and abstract language.

Concrete	Abstract
Physical exercise does not only increase your lung capacity and muscles, it also helps you deal with stress.	Physical exercise does not only improve your bodily condition, it also helps your emotional wellbeing.
It decreases the risk of cardiovascular diseases, diabetes, and depression.	It decreases the risk of various serious illnesses and diseases.
You don't necessarily need to join a soccer team or go to the gym.	You don't necessarily need to join in organized sports activities.
You could also walk or cycle to school.	You could also make different choices in your daily activities.

4.2.2 Measures

Need for closure was measured by the Dutch version (Cratylus, 1995) of Webster and Kruglanski's Need for Cognitive Closure Scale (Kruglanski, Webster, & Klem, 1993; Webster & Kruglanski, 1994). This scale consists of 27 items for which participants indicate the extent to which they agree (1 = strongly disagree, 7 = strongly agree) with statements such as 'I don't like unpredictable situations'.

Due to the length of the questionnaire, the 'preference for order' subscale was omitted. This subscale measures how (un)comfortable someone is with order and structure, a concept that is not relevant for the current hypothesis. Although the Dutch translation has been tested and validated in previous research (Cratylus, 1995), the scale turned out to be too unreliable in this experiment. The scale's total Cronbach's alpha was .60, which is barely reliable. More problematically, the most relevant subscale for this experiment, measuring 'discomfort with ambiguity' (4 items), had a Cronbach's alpha of only .39. Because of these low reliabilities, the mean need for closure score could not be calculated for this experiment. As a substitute for the total scale, to allow for a tentative test of H2, I selected one single item from the discomfort with ambiguity subscale with the best face validity and used this item instead of the total scale. This was item 30 from the original scale of Kruglanski et al. (1993), 'I dislike it when a person's statement could mean many different things'.

Participants rated the text on ten 7-point semantic differential scales to measure the clarity (difficult-easy, simple-complicated, vague-clear, and concise-lengthy; α = 81.) and appreciation (interesting-not interesting, detached-appealing, reserved-attractive, fascinating-boring, personal-not personal, monotonous-diverse; α = .85) of the text. An additional scale abstract-concrete served as a manipulation check.

4.2.3 Participants

Initially, 197 undergraduate students participated in this study and received a lottery ticket in return. After excluding participants who suspected the real purpose of the study (*N* = 8), encountered technical problems with the elevator[3] (*N* = 12), or used the stairs or elevator in groups instead of alone (*N* = 46), the final sample consisted of 131 participants (68% female), with a mean age of 20 years (*SD* = 2.22).

4.2.4 Procedure

The procedure was identical to that of experiment 1 in chapter 3. Participants, who were randomly assigned to one of the experimental conditions, came to the 5th floor of a 20-floor building on campus, where they were seated and received instructions for the first part of the experiment, in which they read and rated the texts. Upon completing this part, participants were asked to go to the 8th floor of the same building, because the remainder of the experiment would take place in another room 'for practical reasons'.

3 On the first and second day of the experiment the elevators in the building malfunctioned from time to time, forcing participants to use the stairs. Everyone who participated in these timeslots was excluded from the analyses.

On the 8th floor, participants were welcomed by a research assistant who unobtrusively noted if the participant had taken the elevator or the stairs, and who brought the participant to a room for the remainder of the experiment. To disguise the real topic of the study, participants were faced with a surprise recall task about the filler text as the second part of the experiment. Finally, they answered the demographical questions and were probed for suspicion.

4.3 Results and discussion experiment 1

4.3.1 Preliminary checks

Participants did not differ in age or gender between the two conditions. A t-test for independent samples showed that the concrete text was rated as more concrete (M = 5.77, SD = 1.06) than the abstract text (M = 4.97, SD = 1.52), $t(128) = 3.47$, $p < .01$, indicating that the manipulation has been successful.

4.3.2 Analyses

As in the first experiment of chapter 3, somewhat less than half of the participants (42%) used the stairs versus the elevator (58%). Table 4.2 shows an overview of the number (and percentage) of participants using the stairs or the elevator in each condition.

Independent sample t-tests showed that the concrete text was rated as more clear (M = 6.15, SD = 0.75) than the abstract text (M = 5.73, SD = 1.08) $t(129) = 2.55$, $p = .01$, and was rated more positively (concrete: M = 4.87, SD = 0.90, abstract: M = 4.49, SD = 1.02) $t(129) = 2.26$, $p = .01$. These findings are in line with the results of Miller et al. (2007), and with the first part of H1.

To test the effect of concreteness on behaviour, the second part of H1, the relation between participants' behaviour and the text that they had read was analysed using chi-square. As can be seen in Table 4.2, there different texts did not lead to differences in behaviour: in both conditions about 40% of the participants took the stairs and 60% used the elevator ($\chi^2(1) = 0.03$, ns.).

Although H2 could not be tested in its original form, binary logistic regression was used to explore the role of discomfort with ambiguity in the relation between message concreteness and participants' reactions. Text version and behaviour were dummy coded, as in chapter 3, and the interaction between text version and discomfort with ambiguity was studied by creating a product variable. Text version, discomfort with ambiguity, and the interaction were then regressed on behaviour and on participants' ratings of the text. The fit of the model was non-significant, $\chi^2(3) = 0.49$, $p = .92$, and none of the predictors was significantly related to the dependent variable (all $ps > .50$). The text version,

Table 4.2 Number of participants (and percentage of participants within condition) who used the stairs or the elevator over both conditions.

		Behaviour	
		Stairs	**Elevator**
Text version	Abstract	28 (41,2%)	40 (58,8%)
	Concrete	25 (39,7%)	38 (60,3%)
	Total	53 (40,5%)	78 (59,5%)

discomfort with ambiguity, or the interaction between those two did not affect participants' choice for the stairs versus the elevator.

Contrary to the hypothesis, the concrete text did not cause more participants to use the stairs than the abstract text, even though they rated the concrete text as more positive and more clear. As in the previous chapter, a possible explanation for this lack of effect can be that habitual behaviour is not easily changed, and that the effect of the concrete text was not strong enough to actually change people's habitual behaviour. In the second experiment, the behavioural measure was therefore replaced by an attitudinal and intentional one. In addition, an extended version of the need for closure measurement was used in order to increase the reliability of the scale.

4.6 Experiment 2 – Method

4.6.1 Material and measures

The texts and evaluative measures were the same as in experiment 1. In addition, the intention to use the stairs was measured.

The need for closure scale was the same as in experiment 1, but with four extra items. As described in experiment 1, especially the most relevant subscale ('discomfort with ambiguity') had a very low reliability. In the original scale of Webster and Kruglanski (Kruglanski et al., 1993; Webster & Kruglanski, 1994) this subscale consists of eight items, whereas in the Dutch version it only has four (Cratylus, 1995). To increase the reliability of the subscale, I included the four items from the original scale that were removed in the Dutch version.

The reliability of the complete need for closure scale was slightly better than in experiment 1, but still not good (Cronbach's $\alpha = .70$). More problematically, the

specific subscale to measure discomfort with ambiguity was still insufficiently reliable, both in the original (N = 8, Cronbach's α = .50) and in the short Dutch composition (N = 4, Cronbach's α = .45). After a closer literature investigation, this seems to be a common problem with the Dutch version of scale (see, for instance, Mannetti, Pierro, Kruglanski, Taris, & Bezinovic, 2002; Van Hiel, Pandelaere, & Duriez, 2004, who report similarly low reliabilities). These reliabilities do not allow for computing an average discomfort with ambiguity score. As in experiment 1, I therefore used the single item that most closely represents discomfort with ambiguity ('I dislike it when a person's statement could mean many different things') as an extra test of the hypothesis. Besides the total need for closure score, all analyses will be repeated with this specific discomfort with ambiguity item to obtain a more complete test of the hypothesis. Instead of requesting participants to move up three floors, as in experiment 1, they were asked whether they would choose the stairs or the elevator for three floors at that moment, on a six-point scale from 1, 'I would certainly take the stairs', to 6, 'I would certainly take the elevator'. Attitudes towards using the stairs were measured on five 6-point semantic differential scales (harmful-beneficial, uncomfortable-comfortable, bad-good, unimportant-important, not nice-nice, α = .78). In addition, participants were asked if they intended to be more active in daily life (1 = 'definitely not', 6 = 'definitely yes'), and how important they thought physical activity was (1 = 'not important', 6 = 'very important').

4.6.2 Participants and procedure

Questionnaires were handed out to all 130 students (75% female, mean age 21, SD = 3.49) attending a lecture that was part of an introductory research methods course. After all questionnaires were handed in, participants were fully debriefed about the experiment and thanked for their participation.

4.7 Results and discussion experiment 2

4.7.1 Preliminary checks

Participants did not differ in age, gender, need for closure, or discomfort with ambiguity between the two conditions An independent sample t-test showed that the concrete text again was rated as more concrete (M = 5.78, SD = 1.22) than the abstract text (M = 4.97, SD = 1.71), $t(127) = 3.13$, $p < .01$, indicating that the manipulation was successful. The rating of concreteness was not correlated with participant's need for closure (r = -.12, p = .17).

4.7.2 Analyses

As in experiment 1, the concrete text was rated more positively (M = 4.76, SD = 0.85) than the abstract text (M = 4.29, SD = 1.13), $t(127) = 2.66$, $p < .01$. There was no difference in clarity between the text versions in this experiment, probably due to a 'ceiling effect': the texts were rated as very clear, both in the abstract (M = 6.21, SD = 0.77) and in the concrete version (M = 6.14, SD = 0.95), $t(127) < 1$.

As in chapter 3, linear regression analyses were used to test the effect of need for closure, concreteness (dummy coded), and the interaction between need for closure and concreteness on people's intention to use the elevator, their attitude towards the stairs, their intention to get more active in daily life, and how important they thought physical activity was. Contrary to the hypothesis, none of the effects were statistically significant. When these four regression analyses were done with the item that measured discomfort with ambiguity instead of the total need for closure scores, the results stay the same[4]. See Table 4.3 for all regression coefficients and p-values.

4.8 Discussion

4.8.1 Overview

In two experiments it was found that a concrete text that urged people to get more active was rated more positively than an abstract version of the same text, but that this did not lead to a subsequent difference in behaviour or behavioural intentions.

Participants rated the concrete text as more concrete than the abstract text in both experiments, indicating that the manipulation of the text had been successful. Moreover, the finding that the concrete text was rated as more clear and more positive than the abstract text is in line with results from previous research (Miller et al., 2007), so the prerequisites to test for the effect on real behaviour were met. The hypothesis that the positivity of concrete language would result in more people following the concrete advice was nevertheless not supported, even when measuring intentions instead of actual behaviour. Also the hypothesis that especially people with a high need for closure would be more persuaded by concrete text was not supported.

4 As in chapter 3, various other analyses were performed to test the hypothesis. This included ANOVAs with need for closure or dislike of ambiguity scores categorized as 'high' or 'low' based on the 33% and 66% percentile scores, or based on a median split. All analyses showed the same results: there was no interaction between need for closure and concreteness on the dependent variables.

Table 4.3 Linear regression analyses predicting participant's attitudes and intentions from the different text versions, need for closure (NfC) or discomfort with ambiguity (Discomf.), and the interaction between those predictors.

Outcome	R^2	F	p	Predictor	B	SE B	Beta	p
Intention elevator	0.00	0.09	.96	Text version	-0.16	2.81	-.05	.95
				NfC	0.05	0.58	.01	.93
				Text version x NfC	0.01	0.75	.00	1.00
Attitude stairs	0.02	0.73	.54	Text version	0.92	1.43	.53	.52
				NfC	0.33	0.30	.16	.26
				Text version x NfC	-0.22	0.38	-.47	.57
Intention activity	0.00	0.11	.95	Text version	0.19	2.24	.07	.93
				NfC	-0.05	0.46	-.02	.91
				Text version x NfC	-0.08	0.60	-.14	.89
Importance activity	0.02	0.95	.42	Text version	0.29	0.78	.31	.71
				NfC	0.20	0.16	.18	.21
				Text version x NfC	-0.07	0.21	-.27	.74
Intention elevator	0.01	0.43	.73	Text version	0.44	0.99	.13	.66
				Discomf.	0.18	0.18	.12	.31
				Text version x Discomf.	-0.16	0.26	-.19	.53
Attitude stairs	0.02	0.63	.60	Text version	-0.02	0.51	-.01	.97
				Discomf.	-0.09	0.09	-.12	.32
				Text version x Discomf.	0.04	0.13	.09	.77
Intention activity	0.01	0.43	.73	Text version	0.50	0.79	.18	.53
				Discomf.	0.01	0.14	.01	.97
				Text version x Discomf.	-0.17	0.21	-.24	.42
Importance activity	0.00	0.15	.93	Text version	-0.07	0.28	-.07	.81
				Discomf.	-0.02	0.05	-.05	.67
				Text version x Discomf.	0.03	0.07	.13	.68

4.8.2 Degrees of concreteness and specificity

A limitation of these experiments is that there was only one concrete and one abstract version of the text. Even though the manipulation check affirmed that the concreteness differed between both versions, it can be argued that the abstract text was rated as not particularly abstract but rather as 'less concrete', scoring a 5 on a 7-point scale. Consequently, it might have been sufficiently concrete, even for people with a high need for closure, and equally persuasive as the concrete text. A more extremely abstract text, however, would have impaired the validity of the experiments. Messages that aim at changing behaviour need a certain degree of specificity – just telling people to 'change their habits and adopt a healthier lifestyle' would certainly have been more abstract, but also far less realistic. Additionally, a very abstract message would probably have been rated more negatively than the concrete message, leading to a confounding factor in the experiments.

Alternatively, an anonymous reviewer of the experiments suggested that both texts may have been too abstract, rather than too concrete. In the research on vividness, concreteness is defined as the degree to which people can visualize the information and translate the text to mental images. The concrete examples in this chapter were more specific than in the abstract message, but maybe terms like 'improve your condition' and 'heart-diseases and diabetes' are still hard to visualize. In that respect, the concrete message could be argued to be still quite abstract.

The manipulation of concreteness and abstractness in this chapter was based on the definition of Miller et al. (2007), who define concrete as 'more specific' and abstract as 'less precise'. The ease of visualization is not a part of this definition. This leads to the interesting question if visualization and specificity are two separate aspects of concreteness, and how they relate to each other. Experiments in which the ease of visualization and the specificity of the information are manipulated separately could lead to more insight in how they both contribute to concreteness, and in which combination they elicit different reactions in attitudes and behaviour. Moreover, concreteness should be manipulated to different degrees, instead of testing only one concrete versus one abstract message, to further investigate if and when concreteness does not only lead to more positive evaluations, but also to a change in intentions or even actual behaviour.

4.8.3 Need for closure

The possible ambiguity in the definition of concreteness, as described above, as well as the unsatisfactory reliability of the need for closure scale makes it difficult to elaborate upon the finding that need for closure did not interact with

the effects of concrete language. Based on the results from the second experiment, it seems that need for closure plays no role in how people react to concrete and abstract language, but this results must be considered a preliminary conclusion.

People with a high need for closure tend to use more stereotypes (Dijksterhuis, van Knippenberg, Kruglanski, & Schaper, 1996) and to leap to conclusions (Webster, Richter, & Kruglanski, 1996), because of the need to quickly gain a complete understanding of things. A tentative explanation for the lack of effect in this experiment could therefore be that participants with a high need for closure routinely 'filled in the blanks' in the abstract text. The content of the message was not very complex, so even in the abstract version the translation of the broad descriptions to concrete examples could be made without much effort. It is possible that participant with a high need for closure thought of concrete examples when reading the abstract text, thereby obscuring the hypothesized effect of need for closure on the reaction to the text.

4.9 Conclusion

As in the previous chapters, the results of the experiments in this study point to interesting directions for future experiments. These diverge too far from the original aim of this thesis, however, to be tested here. For now I will limit myself to the conclusion that language concreteness and need for closure seems to an ineffective combination for tailored health communication.

Appendix: Experimental texts (in Dutch)

Abstract version:

Voldoende bewegen brengt veel voordelen met zich mee. Het verbetert niet alleen je lichamelijke gesteldheid, maar zorgt er ook voor dat je geestelijk beter in je vel zit. Daarnaast verkleint het de kans op ernstige lichamelijke ziekten en aandoeningen. Om voldoende te bewegen, hoef je geen lid van een sportvereniging te zijn. Het maken van andere keuzes in je dagelijkse bewegen, kan al voldoende zijn. Gezond bewegen is dus gemakkelijker dan je denkt!

Concrete version:

Voldoende bewegen brengt veel voordelen met zich mee. Het verbetert niet alleen je conditie en spierkracht, maar zorgt er ook voor dat je beter kunt omgaan met stress. Daarnaast verkleint het de kans op ernstige hartklachten, darmkanker en diabetes. Om voldoende te bewegen, hoef je niet naar de sportschool of de hockeyclub. Met de fiets naar school of lopend boodschappen doen, kan al voldoende zijn. Gezond bewegen is dus gemakkelijker dan je denkt!

5

CONTROLLING LANGUAGE AND LOCUS OF CONTROL

5.1 Introduction

5.1.1 Controlling language

In the preceding chapters, persuasive messages were used in an attempt to change people's behaviour or intentions. Some of those messages directly urged people to do something, such as 'make sure you get enough exercise!' in chapter 2, while other messages phrased the advice more like a suggestion, such as 'you could also use the stairs' in chapter 3. The difference between these strategies, and its possible use in tailored communication, is the topic under investigation in this chapter.

Advice that is formulated as a suggestion, using phrases like 'you could consider doing this' makes use of autonomy-supporting language (Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). It can be used to recommend certain actions, but it leaves the decision to do so to the reader. The advice can also be formulated in controlling language, characterized by phrases like 'you should do this' (Miller et al., 2007; Vansteenkiste, Lens, & Deci, 2006), resulting in a command instead of a suggestion to the reader. The exact definitions of controlling and autonomy-supporting language vary between researchers, but in all cases the degree of freedom left to the reader or listener is the central part of the distinction.

Making a message more controlling is sometimes also done by the use of intense or extreme language because that makes a message more powerful (Miller et al., 2007), but in the current chapter I leave this out of the definition of controlling language. Intense or extreme language emphasizes the emotional aspects of a message or makes the position of the message more extreme (Craig & Blankenship, 2011). A neutral sentence like 'treatment of skin cancer involves removing tumours from the skin', for example, is less intense than 'treatment of skin cancer involves cutting or burning tumours from the skin' (Buller et al., 2000, p. 112). Especially when the sender of a message is a credible source, intense language can make a message more persuasive, because it evokes feelings of urgency and concern (Burgoon, Jones, & Stewart, 1975). However, it does not make a message more controlling in terms of the voluntariness of the advice; it only describes the effects of (not) listening to the advice in a more intense way.

Controlling language in this chapter is defined as language that uses imperatives and explicit commands to change someone's behaviour, whereas autonomy-supporting language uses suggestions and advice. Controlling messages use words like 'ought' and 'should', whereas autonomy supporting messages use 'can' and 'could'.

5.1.2. Persuasion and reactance

Because controlling language is direct and explicit, it is easier to understand than autonomy-supporting language (Miller et al., 2007). Although implicit or indirect language is often used because it is more polite (Cheng & Warren, 2003), including an explicit conclusion in a message can make it more persuasive (Cruz, 1998; O'Keefe, 1997, 2002).

In a preliminary experiment I asked participants' evaluations of messages in which the conclusion was either left implicit ('it is healthy to walk 10,000 steps each day; you have only walked 6000 so far') or made explicit ('…so you must walk 4000 steps more'). In line with the conclusions of O'Keefe (2002) and Cruz (1998), participants found the message including a conclusion more persuasive. They reported that they would be more likely to obey that message than the message without a conclusion. At the same time, however, they also evaluated the message more negatively: it was more annoying and less helpful (Jongenelen, Hoeken, & Hendriks, 2010).

The negative reaction to explicitly controlling messages can be explained by reactance theory (Brehm, 1966). Reactance theory describes that people value their behavioural freedom, and how persuasive attempts can threaten this freedom. As long as one is free to do anything that comes to mind, behavioural freedom is high; orders from others may, however, diminish or even eliminate this freedom. Psychological reactance is the arousal that occurs when the freedom of choice is threatened, and it is a negative state that people will try to correct. This correction can take shape in many forms, including negative thoughts about the person who gave the order, and it can ultimately lead to a 'boomerang effect' in which people do exactly the opposite of what they have been told to do (Dillard & Shen, 2005).

Emphasizing people's freedom of choice after an explicitly controlling message can help in preventing reactance. Miller et al. (2007) showed that including a short post script with sentences like 'You know what is best for yourself, […] the choice is yours' (p. 240) made people's reaction towards messages in controlling language ('you ought to exercise as often as you can', p. 239) less negative. Although this is an interesting finding in the light of reactance research and freedom-restoring strategies, its usability in the practice of health communication might be low. Participants in Miller et al.'s study probably read to the end of the message because they were supposed to do so in the setting of the experiment. In a more natural setting, however, the controlling language would probably have caused reactance and made people stop reading long before they came to the post script at the end.

Instead of adapting the end of a message, by leaving away the conclusion or adding a freedom-restoring post-script, it would be more useful to word the

whole message in such a way that it does not irritate the reader, yet is as persuasive as possible. A personality trait that moderates the effect of controlling language on irritation would make it possible to create messages that are tailored to an individual's preference for controlling or autonomy-supporting language.

5.1.3 Relevant personality characteristics

The most obvious variable that could moderate the irritation caused by controlling language, would be reactance as a personality trait. If some people have higher 'basic' reactance, or are more easily provoked than others, this would probably influence their reaction to controlling language. There have indeed been attempts to create a scale that measures dispositional reactance (Dowd, Wallbrown, Sanders, & Yesenosky, 1994; Hong & Faedda, 1996), but whether or not this scale is valid to measure trait reactance is not clear (Miron & Brehm, 2006). It has seldom been used to predict reactant behaviour, and in some cases even seems to predict reactance in the opposite direction: people who score high on this scale sometimes react more positively to overtly controlling messages where they are expected to react more negatively (Silvia, 2006). Reactance as a personality trait therefore does not seem to be a suitable moderating variable, at least not until it can be measured reliably. There might be a more indirect way to measure someone's reaction to controlling language, however: locus of control.

When something happens to people, either good or bad, they can attribute it to factors outside of their control ('my car got stolen because the police didn't do their work') or factors within themselves ('my car got stolen because I forgot to lock it'). Originally it was thought that people are in general fairly consistent in those attributions, and can thus be classified as having either a predominantly internal or external locus of control (Rotter, 1966). Internals were thought to attribute the responsibility for things that happened to them to themselves, whereas externals were thought to seek the cause of events in things that lie outside of their control. This classification soon turned out to be an oversimplification: people can have an internal locus of control when it comes to one topic (e.g., their health), but an external locus of control for another (e.g., politics) (Mirels, 1970). Wallston, Wallston, and DeVellis (1978) developed an instrument to specifically measure people's Health Locus of Control, which measures the degree to which people believe the responsibility for their health lies mostly with themselves (internal), with doctors and the medical science (external), or depends on fate and luck (external).

Health locus of control in itself has been shown to be only a mediocre predictor of health behaviour – internals and externals do not seem to differ in

their actions towards health and illness (Luszczynska & Schwarzer, 2005; Wallston, 2005). There are indications, however, that it does play a role in how people react to health communication. In a study on mammography promotion (Williams-Piehota, Schneider, Pizarro, Mowad, & Salovey, 2004), women who received information that matched their health locus of control reacted more favourably than women who received a mismatched message. Messages containing sentences like 'You hold the key to your health, schedule a mammogram today' were more effective for internals, whereas 'Health care providers hold the key to your health, schedule a mammogram today' (Williams-Piehota et al., 2004, p. 412) were more effective for externals.

In the current experiment, I hypothesize that health locus of control will interact with people's reaction to controlling language. A message in controlling language, which tells people that they must do something, will probably cause a feeling of pressure in both internals and externals, but their reaction to this pressure is hypothesized to differ. Internals, who feel that they are responsible for their own health, are expected to react negatively to a message that explicitly commands them to do something. They will probably react more favourably when the message is worded in such a way that it appeals to their own responsibility and leaves the decision to act to themselves. Externals, on the other hand, will probably react more positively to the controlling message, because they feel that others play an important role in their health. A message that gives them freedom of choice or too much responsibility will probably lead to negative reactions because they lack a feeling of self-efficacy (see also Holt, Clark, Kreuter, & Scharff, 2000). The hypotheses in this experiment are thus as follows:

H1: people who read a message in controlling language will feel more pressure than people who read a message in autonomy-supporting language.

H2: peoples' reactions to this pressure will be moderated by their health locus of control. Internals will react negatively to the pressure caused by the controlling language, leading to a negative evaluation of the message and a lower intention to obey, whereas externals will react less negatively.

5.2 Method

5.2.1 Material

The text in this experiment explained about sexually transferrable diseases (STDs), and urged people to get an STD test if they had had unprotected sexual intercourse. The introduction, which explained the spread and symptoms of STDs, was identical in both versions. The second part urged people to get

themselves tested, in either controlling or autonomy-supporting sentences. Table 5.1 shows an example of sentences from both versions of the text, translated from Dutch (see Appendix for the complete Dutch texts). The text had a total length of 253 words and varied between conditions on nine sentences. A pre-test with 21 participants showed that high controlling text was indeed perceived as more controlling (M = 5.21, SD = 1.04) than the autonomy-supporting text (M = 2.74, SD = 1.23) ($t(20) = 7.98$, $p < .05$).

Table 5.1 Example sentences using autonomy-supporting or controlling language.

Autonomy-supporting	Controlling
Consider an STD test.	Do an STD test.
If your (ex) partner turns out to have an STD, it is wise to get yourself tested.	If your (ex) partner turns out to have an STD, it is necessary to get yourself tested.
Before you and your partner stop using condoms you could both get a test.	Before you and your partner stop using condoms you should both get a test.
Think about making an appointment to get tested.	Make an appointment to get tested today.

5.2.2 Measures

The intention to get tested for STDs was measured with two questions (α = .85) 'I plan to get myself tested in the next month', and 'I plan to get myself tested in the next year' with seven-point Likert scales (1 = 'totally disagree', 7 = 'totally agree'). The attitude towards STD testing was measured with five seven-point semantic differential scales (bad-good; unfavourable-favourable; negative-positive; foolish-wise; unimportant-important; α = .84); the attitude towards the text was measured on six semantic differentials (unclear-clear; difficult-easy; disorderly-orderly; boring-interesting; annoying-nice; unattractive-attractive; α = .85).

Participants' negative feelings after reading the text were measured on 7-point scales ('At this moment, do you feel…?', after which 11 feelings were listed, with 1 = 'not at all', 7 = 'very much'). A principal component analysis with promax rotation revealed two factors in these feelings that together explained 78% of the variance. One factor measured anger, with three items (hostile, angry, and irritable, α = .85); the other factor measured distress, with eight items (e.g. afraid, upset, nervous, α = .95). Four questions asked to what degree participants felt pressured by the text, on 7-point scales (e.g. 'The text tries to

manipulate me', 'The text threatens my freedom of choice', 1 = 'totally disagree', 7 = 'totally agree' α = .84).

Health locus of control was measured with a validated Dutch translation of the Health Locus of Control Scale (Halfens & Philipsen, 1988). This scale consists of 18 items like 'If I take the right actions, I can stay healthy', and 'My good health is largely a matter of good fortune', with 7-point Likert scales (1 = 'totally disagree', 7 = 'totally agree'). A principal component analysis with promax rotation was conducted with data of all 223 participants included to confirm the composition of the subscales. The three subscales together explained 39,5% of the variance, and after rotation all items loaded on the corresponding factors (all factor loadings > 0.40). The 'fate' and 'powerful others' subscales of the MHLC both had rather low reliabilities (α = 0.67 and α = 0.56 respectively, which is comparable to previous findings of for instance Claassen et al. (2010), and were therefore combined to one 'external' subscale with a somewhat better reliability (α = .66). The reliability of the internal subscale was sufficient (α = .70). The final score for health locus of control was calculated by subtracting the score on the external scale from the internal scale, resulting in a single score with higher values indicating a more internal health locus of control.

5.2.3 Participants

Participants were recruited via social network Internet sites, where anonymous links to the online questionnaire were distributed. Out of the 223 people who filled out the questionnaire, only those participants for whom STD testing was relevant were used for the experimental analyses, leaving a sample of 109 people (28 men, 81 women, aged 18 to 33, mean age = 22, SD = 1.98) who indicated that they had had unprotected sex in the past and that they had never been tested for STDs.

5.2.4 Procedure

By clicking on the link to the experiment, participants were led to a website containing an introduction and explanation about the study, and a link to the study itself. The questionnaire and text were introduced as being part of a study to evaluate a new informative text about STD infection and testing. It was emphasized that all data were collected anonymously, but that participants could leave their e-mail address at the end to enrol in a draw for a gift voucher.

Participants were randomly assigned to either the controlling or the autonomy-supporting condition and read the corresponding text, after which the dependent variables were measured. The last part of the questionnaire consisted of the Locus of Control Scale and participants' demographic information. After closing the questionnaire, participants were fully debriefed

on the experimental questions. It was explained that the text was written specifically for this experiment, but that all information in it was genuine and correct.

5.3 Results

5.6.1 Preliminary checks

Health locus of control, gender, and age of the participants did not differ between the conditions, nor was there an effect of participants' gender on health locus of control or the intention to get tested.

5.6.2 Analyses

An independent sample t-test showed that the controlling message led to more experienced pressure (M = 3.67, SD = 1.45) than the autonomy-supporting message (M = 2.97, SD = 1.19), $t(107) = 2.67$, $p < .01$, $\eta_p^2 = .06$, in accordance with H1.

Because all variables except the text version were measured on continuous scales, the relations between experienced pressure, anger, distress, locus of control, and the intention to get an STD-test were analysed using linear regression. As in chapter 3 and 4, text version was dummy coded into a new variable, and the interaction variable was built by multiplying this dummy variable by participants' locus of control score.

Nine separate regression analyses were done to test the relation between the text version, experienced pressure, anger and distress, participants' intention to get tested, and their attitudes towards the text and the STD test. See Table 5.2 for an overview of the analyses, the coefficients, and p-values.

Experienced pressure predicted participants' feelings of both anger and distress. Contrary to H2, however, this effect was not moderated by health locus of control, nor did locus of control have an effect of its own. Anger did not affect the intention to get an STD test or the attitude towards testing, but was marginally significantly related to the attitude towards the text. The interaction between anger and health locus of control did not affect any of these outcomes. Distress, on the other hand, did: irrespective of health locus of control, distress had a positive effect on intention but not on attitudes. For a graphical representation of the significant effects, see Figure 5.1.

Table 5.2 Linear regression analyses predicting participant's emotions, attitudes and intentions from the different text versions, Health Locus of Control (LOC), and the interaction between those two. Rows in bold indicate significant ($p < .05$) effects.

Outcome	R2	F	*p*	Predictor	B	SE B	Beta	*p*
Pressure	**0.08**	**2.91**	**.04**	**Version**	**0.87**	**0.43**	**.31**	**< .01**
				LOC	-0.06	0.17	-.05	.75
				LOC x version	-0.13	0.23	-.10	.58
Anger	**0.27**	**12.82**	**< .01**	**Pressure**	**0.61**	**1.36**	**.69**	**< .01**
				LOC	0.37	0.29	.34	.20
				LOC x Pressure	-0.12	0.08	-.44	.12
Distress	**0.15**	**5.96**	**< .01**	**Pressure**	**2.86**	**0.13**	**.36**	**.04**
				LOC	-0.03	0.28	-.35	.90
				LOC x Pressure	0.02	0.08	.06	.85
Intention	0.05	1.72	.17	Anger	0.23	0.17	.19	.19
				LOC	0.10	0.23	.07	.68
				LOC x Anger	0.02	0.10	.03	.86
Intention	**0.14**	**5.64**	**< .01**	**Distress**	**0.56**	**0.19**	**.42**	**.01**
				LOC	0.20	0.22	.15	.36
				LOC x Distress	-0.05	0.10	-.10	.63
Attitude STD test	0.01	0.47	.70	Anger	-0.09	0.12	-.10	.47
				LOC	0.03	0.16	.03	.87
				LOC x Anger	-0.01	0.07	-.02	.94
Attitude STD test	0.01	0.17	.92	Distress	0.04	0.14	.04	.80
				LOC	0.10	0.16	.12	.52
				LOC x Distress	-0.04	0.07	-.12	.57
Attitude text	**0.14**	**5.69**	**< .01**	Anger	-0.21	0.11	-.26	.06
				LOC	0.19	0.15	.21	.20
				LOC x Anger	-0.06	0.07	-.17	.35
Attitude text	0.06	2.19	.09	Distress	-0.14	0.14	-.16	.31
				LOC	0.16	0.16	.18	.31
				LOC x Distress	-0.03	0.07	-.09	.66

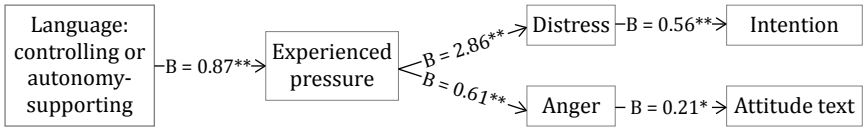

Figure 5.1 Path model of significant regression slopes.

** $p < .05$, * $p = .06$

5.4 Discussion

5.4.1 Health locus of control

As hypothesized, controlling language made people feel more pressured. They felt that the text tried to manipulate or influence them, which led to more feelings of distress and anger. Feelings of distress led to more positive intentions to get an STD test, whereas anger was not related to this intention. There also was a non-significant trend of anger leading to a more negative evaluation of the text. Contrary to the hypotheses, health locus of control did not moderate any of these relations: internals and externals reacted the same to experienced pressure, and their feelings of anger or distress did not depend on their health locus of control. How much pressure people felt as a result of the controlling language was also not related to their health locus of control, indicating that their interpretation of the text and its commanding nature did not depend on their health locus of control.

Although the reliability of the health locus of control measurement was not optimal, the results seem to point in the direction of a clear lack of effects: people's reaction towards controlling language does not depend on their health locus of control. It was hypothesized that people with an external locus would react less negatively to commanding language, because this commanding tone can be justified if the responsibility for one's health lies mainly outside oneself. But based on the results of this study, this hypothesized relation cannot be confirmed.

In the original health locus of control scale as created by Wallston et al. (1978) and translated by Halfens and Philipsen (1988), there are two different subscales that measure external locus of control. The 'powerful others' (e.g. doctors, nurses) and 'fate' subscale both measure an external locus of control, but they are separate constructs. The reliability of these subscales in this experiment was too low to treat them as separate constructs and therefore I

combined them into one external measure. Using a generalized external locus score is common practice (see, for instance Holt et al., 2000; Williams-Piehota et al., 2004), because it allows for an easier interpretation of the scores (i.e. a one-dimensional scale ranging from very internal to very external).

In the current experiment it would have been useful to look at the different roles of both subscales. It is plausible that people who feel that their health is mainly dependent on doctors (i.e. people who score high on the 'powerful others' subscale) react differently to controlling language than people who feel that their health is a matter of fate or luck. Although both reflect an external health locus of control, the former group may accept a controlling message more easily than the latter. But before this hypothesis can be tested, additional research into the reliability and validity of the scales seems to be required. Even in the original studies of Halfens and Philipsen (1988) the reliabilities are rather low, with Cronbach's alphas around .70. In the current experiment I tentatively tested the hypotheses with participants' score on the 'powerful others' subscale as a measure for external locus of control but found no significant effects – possibly partially because of the low reliability and hence the large amount of statistical noise in the measure.

All in all, people's reaction towards controlling or autonomy-supporting language seems not to be moderated by their internal or generalized external health locus of control. When tailoring health messages to people's locus of control, it may be more useful to focus on the way the message describes the responsibility for one's health, as demonstrated by Williams-Piehota and colleagues (2004).

5.4.2 Negative emotions

The low reliabilities of the locus of control scale, in combination with the lack of support for the main hypothesis, could also be explained by participants not taking the questionnaire seriously. Because participation was via the Internet, without the direct presence of a researcher, participants may have clicked through the answers quickly and randomly without paying much attention to the texts and the questions. But this explanation is defied by the meaningful pattern of the negative emotions and their effects.

In the hypothesis it was stated that controlling language would lead to 'negative emotions' because of the pressure people felt from the message. These negative emotions appeared to fall into two categories: feelings of anger (irritation, hostility) and feelings of distress (nervousness, worry). Although the mean scores for all these emotions were low, people who reported greater experienced pressure (as a result of the controlling message) also reported slightly higher negative emotions of both sorts. Interestingly, these two

categories of emotions had different effects on people's reaction towards the text. In line with reactance theory, angry feelings seemed to lead to a more negative attitude towards the text. Feelings of distress, on the other hand, had a positive relation with the intention to listen to the advice in the message: people who reported higher distress also reported a higher intention to get tested for STDs.

The observation that certain negative emotions can be positive for the effect of health communication is in line with previous findings. In many situations, emotions and feelings can help decide how to act and what to do, because they signal whether a situation is good or bad and needs to be changed (see, for instance Schwarz, 2002, for an interesting discussion on the informative functions of emotions in cognitive processes). In health communication it has been found that messages that convey the 'right' negative emotions can help in encouraging people to take action. Feelings of disgust, for instance, may help in creating negative associations with unhealthy behaviours, and feelings of fear can help alerting audiences (Dillard & Nabi, 2006). In the current experiments, the controlling language seems to have caused mild feelings of distress that made people feel a certain (although rather small) sense of urgency and need to get themselves tested for STDs.

5.5 Conclusion

Variations in controlling or autonomy-supporting language do not seem to be useful to tailor messages to people's health locus of control. Controlling language can be used, however, to urge people into action by causing mild feelings of distress.

Appendix: Experimental texts (in Dutch)

Controlling version:

Doe een soa-test!
Soa's zijn seksueel overdraagbare aandoeningen. Voorbeelden van soa's zijn: infectie met hiv, chlamydia en herpes genitalis. Per jaar lopen in Nederland naar schatting ruim 100.000 mensen een soa op. Soa's worden overgedragen via sperma, bloed, vaginaal vocht en bij contact van slijmvliezen. Sommige soa's hebben ernstige gevolgen als ze niet op tijd worden behandeld. Gelukkig zijn de meeste gemakkelijk te genezen.

Soa's gaan nooit vanzelf over. Heb je onveilig gevreeën of is tijdens het vrijen het condoom gescheurd, dan moet je natuurlijk een soa-test doen. Soa's kunnen nare gevolgen hebben voor jou, maar ook voor anderen. Soa's zijn namelijk besmettelijk. Wanneer je gewaarschuwd wordt door een partner of ex-partner, die een soa heeft, is het noodzakelijk om zelf ook een soa-test te doen om uit te zoeken of de soa aan jou overgedragen is. Bij lichamelijke klachten na onveilig vrijen moet je een bezoekje aan de dokter brengen. Je kunt echter ook een soa hebben zonder dat je er iets van merkt. Besluit dus om je te laten onderzoeken en zekerheid te krijgen over je gezondheid. Je moet ook een soa-test doen wanneer je een vaste relatie hebt en zonder condooms wilt vrijen. Om zeker te zijn dat jij en je partner geen soa hebben, moeten jullie je allebei laten onderzoeken.

Herken je jezelf in een van deze situaties? Dan moet je je huisarts, de GGD of een speciale soa-poli in het ziekenhuis benaderen voor een soa-test. Voorkom dus veel ellende en maak vandaag nog een afspraak voor een soa-test!

Autonomy-supporting:

Overweeg een soa-test
Soa's zijn seksueel overdraagbare aandoeningen. Voorbeelden van soa's zijn: infectie met hiv, chlamydia en herpes genitalis. Per jaar lopen in Nederland naar schatting ruim 100.000 mensen een soa op. Soa's worden overgedragen via sperma, bloed, vaginaal vocht en bij contact van slijmvliezen. Sommige soa's hebben ernstige gevolgen als ze niet op tijd worden behandeld. Gelukkig zijn de meeste gemakkelijk te genezen.

Soa's gaan nooit vanzelf over. Heb je onveilig gevreeën of is tijdens het vrijen het condoom gescheurd, dan kun je misschien een soa-test doen. Soa's kunnen nare gevolgen hebben voor jou, maar ook voor anderen. Soa's zijn namelijk besmettelijk. Wanneer je gewaarschuwd wordt door een partner of ex-partner, die een soa heeft, is het verstandig om zelf ook een soa-test te doen om uit te

zoeken of de soa aan jou overgedragen is. Bij lichamelijke klachten na onveilig vrijen kun je een bezoekje aan de dokter brengen. Je kunt echter ook een soa hebben zonder dat je er iets van merkt. Overweeg dus om je te laten onderzoeken en zekerheid te krijgen over je gezondheid. Je kunt ook een soa-test overwegen wanneer je een vaste relatie hebt en zonder condooms wilt vrijen. Om zeker te zijn dat jij en je partner geen soa hebben, kunnen jullie je allebei laten onderzoeken.

Herken je jezelf in een van deze situaties? Dan kun je je huisarts, de GGD of een speciale soa-poli in het ziekenhuis benaderen voor een soa-test. Voorkom dus veel ellende en denk na over een afspraak voor een soa-test!

6

GENERAL DISCUSSION

6.1 Overview

With regard to health, today's society is faced with a paradoxical situation: Thanks to medical science we now know more than ever about the factors that contribute to a long and healthy life and about the things that threaten our health, and yet at the same time we suffer from more preventable deaths than ever before (Mokdad et al., 2004). This is principally the result of the fact that we are constantly surrounded and allured by unhealthy - but tasty and comfortable - things to eat and to do, while we are unaware of, or simply ignoring, the healthy alternatives (Brownell & Horgen, 2004). In a society in which living healthily requires constant efforts and attention, effective health communication is a necessity. Unfortunately, most conventional health communication has been proven to be only moderately effective at best (Noar, 2006).

This thesis therefore focussed on a promising method to make health communication more effective: tailoring. Tailored health communication is made to fit individual receivers, and is assumed to be more persuasive (Kreuter, Strecher et al., 1999). Because studies of tailored health communication often focus on the same limited set of variables (Noar et al., 2007), my experiments were aimed towards testing new combinations of message strategies and individual differences that could be used to create tailored health communication. In this last chapter I review the experiments in the previous chapters, and provide an integrated view on the results and the conclusions that can be drawn from these results.

6.2 Summary of the empirical chapters

6.2.1 Chapter 2: framing and motivation

In chapter 2, the consequences of health behaviour were framed in terms of gains or losses, and it was hypothesised that people's motivational orientation would interact with the framing of the message. Messages with a gain-frame were expected to be more persuasive for people with an approach motivation, whereas messages with a loss-frame were expected to be more persuasive for people with an avoidance motivation. Although several previous studies found this interaction when describing the effects of dental flossing, in the experiment in this chapter these results could not be replicated with a text about the effects of exercise.

There are several possible explanations of why the effects of texts on dental flossing differ from those of texts about exercise, and texts on dental hygiene have been shown to yield different effect patterns in other studies as well. The most

important conclusion of the experiment in chapter 2, however, is its implication for tailored health communication: Matching gain- and loss-frames to people's approach or avoidance motivation does not always make a more persuasive message.

6.2.2 Chapter 3: social norms and self-monitoring

Behavioural choices are not always based on their anticipated outcomes; people also adapt their behaviour to that of others. In chapter 3, a text that urged people to use the stairs instead of the elevator mentioned in one version that most other people did so, while the other version mentioned that most other people did not. The hypothesis was that high self-monitoring people would adapt their behaviour to that of the majority, and that people low in self-monitoring would not. This interaction between self-monitoring and social norms was not found. A second experiment, in which intentions and attitudes were measured instead of real behaviour, showed no support for this hypothesis either.

6.2.3 Chapter 4: concreteness and need for closure

Using the stairs instead of the elevator was the behaviour of interest in chapter 4, too. Instead of changing the content of the message, however, in this chapter the texts only differed in style. One version used concrete words and descriptions to explain why people should use the stairs, the other used abstract language. Because abstract language is less exact and can be perceived as more vague than concrete language, it was hypothesized that the latter would lead to more positive reactions to the text than the former. This was expected to be the case especially for people with a high need for closure, because they prefer a clear-cut description and dislike vagueness. In two experiments, one measuring behaviour and one measuring behavioural intentions and attitudes, this hypothesis could not be confirmed.

6.2.4 Chapter 5: controlling language and locus of control

As in chapter 4, the texts in chapter 5 used differences in style rather than in content. The message, advising people to get themselves tested for sexually transmittable diseases, used controlling language in one version and autonomy-supporting language in the other. Controlling language is characterized by explicit and direct commands, whereas autonomy-supporting language uses merely suggestions and advice. It was hypothesized that controlling language would cause people to feel pressured, a negative feeling, and that especially people with an internal health locus of control would react negatively to this pressure because they feel that their health is their own responsibility. People with an external locus of control, on the other hand, feel that others are

responsible for their health and were therefore hypothesized to react less negatively to controlling language. Although the results showed that controlling language indeed led to more negative emotions than autonomy-supporting language, this effect did not differ between people with an internal or external locus of control.

6.3 Interpreting the results

In all four empirical chapters, the hypothesis was that the effect of a specific message strategy would be moderated by a related personality characteristic, so that people would react more favourably if they read a message that 'matched' their individual personality. None of these hypotheses were supported by the experimental results, however, because all hypothesized interaction effects were statistically non-significant.

Non-significant findings are hard to interpret, because they can be explained in multiple ways. The simplest explanation is ascribing the results to bad luck. For each statistical test, there is a chance that the hypothesis is rejected incorrectly (the so-called type II error). Even though the chance is extremely small that this happens in six experiments in a row, theoretically it is very well possible that it happens. However, the chance of a type II error decreases when sample size increases (Cohen, 1988, 1992). Since the experiments in this thesis have a generous number of participants, writing off the results simply as a type II error occurring six times in a row is not very reasonable.

A second explanation that would render the results of the experiments useless is that the methodological paradigm was flawed. When failing to find a predicted effect six times in a row, there may have been something wrong with the experimental design or the way the effect was measured. There are two reasons that this explanation, too, is not very likely. The first one is that the research method was slightly different in all experiments: independent variables were different across experiments, there was variation in the way the effect was measured (different behaviours, measured as real behaviour or attitudes), and participants were from different populations. A flaw in the paradigm would therefore have been corrected in one of the other experiments. Moreover, the experiments closely followed the experimental design of previous studies, and as such should have been able to reproduce the same effects.

I therefore postulate that the results of these experiments cannot be put down to bad luck or methodological errors, and that instead they show a meaningful pattern. The conclusion that can be drawn from these results is that the investigated variables were plausible yet ineffective approaches to create

tailored health messages. What this means for the theory of tailored health communication will be elaborated upon in the next sections.

6.4 Explaining the results

6.4.1 Variation in variables

Published research on tailored health communication often relied on the same, limited, set of behavioural construct theories to create tailored messages (Noar et al., 2007), including the transtheoretical model and stages of change theory (Prochaska & DiClemente, 1983), the Health Belief Model (Janz & Becker, 1984), and Social Cognitive Theory (Bandura, 1998). As described in chapter 1, the aim of this thesis was to explore the effectiveness of other constructs, and I therefore tested alternative combinations of individual differences and message characteristics. Although those combinations were derived from the literature and based on previous studies, the use of those alternative variables to create tailored health communication seems not to be effective.

From the experiments in this thesis it is thus clear that not just any combination of individual differences and their appropriate message characteristics makes a message more persuasive. Although the messages were tailored in the sense that they were made to fit some people better than others, they did not elicit the more positive reactions that tailored messages are supposed to bring about. To derive a meaningful conclusion from this finding, the difference between the variables that 'work' and those that do not needs further scrutiny.

When comparing theories like the stages of change, the health belief model, and social cognitive theory on the one hand, with motivational orientation, self-monitoring, need for closure, and locus of control on the other hand, one particular difference stands out. The former theories are mostly specifically about the determinants of health behaviour, whereas the latter theories are more broad and general. The health belief model, for instance, describes how people's perceived susceptibility to a disease and its perceived severity influence the chance that someone will take measures to avoid this disease (Janz & Becker, 1984). It is easy to see how this theory can be used in tailored communication: People who know that diabetes is a serious disease but perceive their own chance of developing diabetes as quite low, need a different message than people who do think they are at risk but that diabetes is not a serious condition. In this example the variables in the theory (i.e. perceived risk, perceived severity) are easily translated to differences in message content. The theories that I used in my experiments, on the other hand, were generally not directly related to the content of the health messages. Motivational orientation for instance, as used in

chapter 2, is a broad concept that does not apply to health behaviour only but also to the way people perceive everything else.

The difference between the 'health specificity' of the theories used in successful versus unsuccessful tailored health messages may be an explanation for the findings in this thesis. Maybe tailored health communication works best, or even only, when the messages are adapted to constructs from behavioural theories on health behaviour. It must be noted, however, that the experiment in chapter 5 used differences in people's health locus of control as a predictor of how they reacted to controlling health messages. This is a rather health specific variable, and yet the hypothesized effect was not found. Moreover, the theory used in chapter 2, about people's approach and avoidance motivation, is one of the non-health specific theories and it is precisely this theory that has successfully been used to create tailored messages by previous researchers (Mann et al., 2004; Sherman et al., 2006; Updegraff et al., 2007).

To adequately answer the question whether health specific theories are more useful in tailored health communication than non-health specific theories, a (meta)analysis of a large body of studies would be in order. This analysis would compare the theories used in successful experiments with those in unsuccessful experiments, to search for a meaningful pattern or categories of theories. Unfortunately, such an analysis calls for reports of both significant and non-significant findings. Non-significant results are seldom published in academic journals, and such an analysis will therefore probably be impracticable.

6.4.2 Feeling special

A second difference that may have played a role in the results of my experiments does not involve the theoretical design of the experiments, but the presentation of the messages. This point is best illustrated by the example of a tailored health message described in Figure 1.1 (chapter 1). The introduction of this brochure reads: 'Based on what you told us on the phone, we created this newsletter just for you'. In contrast, the messages used in my experiments were generally just short texts included in the questionnaire participants were filling in. The messages were introduced with sentences like: 'Please read the message below and answer the questions on the next page'.

The methods sections of most published studies do not explicitly describe how the tailored messages were introduced, and it is not clear how common it is to tell participants that the message was made especially for them. For the studies that were done in real life settings, however, and from the few examples I have seen when visiting other researchers, it seems safe to assume that at least in part of the studies the introduction of the tailored message was similar to the one in the example in Figure 1.1. The fact that I did not explicitly tell participants

that they were about to read a message that would fit them, may account for the fact that I did not find a superior effect of tailored messages. If this difference indeed explains the lack of significant effects, however, the consequences would reach far beyond the results of this thesis. In the next section I will therefore elaborate on this point.

6.5 The (in)effectiveness of tailored health communication

6.5.1 Placebo effects

As descriptions like 'this brochure is made especially for you' seem to be included in many examples of successful tailored health communication, it is important to know to which degree they are essential or sufficient to bring about this success. If they are essential, i.e. if a tailored message is only more persuasive when it contains phrases like 'especially for you', these phrases may play a moderating or a mediating role in people's reaction to the message. Maybe these phrases change how people process the information, or catch the attention of readers.

Moreover, it could also be the case that these phrases are not only essential but even sufficient to make the message more successful. Just including claims like 'this information is meant for you, based on the things we know about you' in a message may be enough to elicit more positive reactions and more persuasion, even if the message itself is not tailored at all. It is known from an abundance of research that the mere expectation of the effect of for instance a drug can cause the effects to take place without presence of the real drug. This placebo effect has for instance been shown to occur when people think they drink alcohol, when they are in fact, unknowingly, drinking alcohol free beverages: they act and feel like they are drunk even though in reality they are not (Hull & Bond, 1986). A similar placebo effect might occur when people read that they will receive information that is made especially for them: just the expectation that this information is special might have its influence on how people act and feel.

There are indeed studies that suggest that the effect of tailored health communication is at least partly due to a placebo effect (Webb, Hendricks, & Brandon, 2007; Webb, Simmons, & Brandon, 2005). In a smoking-cessation experiment (Webb et al., 2005), participants received anti-smoking booklets that varied in the degree of personalisation. In one condition the participants received a standard, non-personalized booklet, in the second condition the booklet was minimally personalized and contained just the name of the

participant, and in the third condition the booklet was extensively personalized and referred to the participant's name, age, gender, and smoking habits. The actual smoking related content was identical and non-tailored in all three versions, although the personalized versions pretended to be based on information participants provided in an individual assessment.

The results showed a linear relation between personalisation and evaluating. The extensively personalized, placebo-tailored booklet was rated most positively, followed by the minimally personalized booklet, which in turn was rated more positively than the standard booklet. Moreover, there was a marginally significant trend of readiness to quit smoking: the more personalized the booklet was, the more people increased in their readiness to quit. This effect was moderated by participant's expectancy of tailored materials. Especially participants who had positive expectancies of tailored materials showed more readiness to quit after reading the ostensibly tailored booklet, whereas people who did not believe in the positive effect of tailored materials were more ready to quit after reading the generic booklet.

The results of this experiment were replicated and extended in a second experiment (Webb et al., 2007). In 2 x 2 between-participants experimental design, participants received booklets that were either placebo-tailored or non-personalized, and their expectancies towards tailored materials were either primed or not. In the priming conditions, participants who received a placebo-tailored booklet read that tailored materials would be more effective ('Tailored information focuses your attention on the most important topics for you. Your time is not wasted reading information that does not apply to you', p. 601), whereas people who received the non-personalized booklet read that standard materials would be more effective ('You get to choose what is important. With standard booklets, we include a lot of information, and you get to decide which information is useful and which is not', p. 601). As in the previous experiment, the placebo-tailored booklets yielded more positive evaluations than the standard booklet. Moreover, the effects were strengthened by the priming intervention: the more effective participants thought tailoring would be, the more positively they responded to the ostensibly tailored booklet.

The results of Webb and colleagues (2007; 2005) could cast a new light on previous studies that have found positive effects of tailored health communication. Apparently, the belief that information is made 'especially for you' changes the way that information is received, especially so if you believe that tailored information will be more helpful. In many previous experiments on tailored health communication, participants in the tailored conditions were explicitly told that the messages they received were tailored for them. The results of Webb and colleagues could imply, in a worst-case scenario, that all

previously found effects of tailored health communication are merely a placebo effect, and that the effect of tailoring in and of itself is non-existent.

There are surprisingly few papers in the tailored health communication literature that discuss the findings of Webb. Dijkstra (2008) refers to the questionnaire to measure tailoring outcome expectancies that is used in Webb et al. (2005), and mentions that their experiment shows that minimal personalisation is not particularly effective. Hawkins and colleagues (Hawkins, Kreuter, Resnicow, Fishbein, & Dijkstra, 2008) briefly describe the effects of placebo-tailored health communication when discussing the effects of readers' outcome expectancies, but mostly focus on the ethical aspects of raising false expectations (i.e. telling participants that their booklet is tailored while it is not). They do not go into the question of what these effects mean for theories on tailored health communication, but only declare that 'researchers must judge for themselves whether this level of deceit is warranted in specific health communication contexts' (p. 459).

Although the ethical question of misinforming people about the level of tailoring is an important one in the applied use of tailored health communication, writing off Webb's results as 'deceit' does not do justice to the importance of these results. To expand the knowledge on the mechanisms that underlie the effects of tailoring, a cause that those involved in tailored health communication underwrite themselves (e.g. Hawkins et al., 2008; Rimer & Kreuter, 2006), it is crucial to know whether those effects are truly the result of people processing the tailored information differently, or if they are at least partially the effect of people's expectations to read something that is supposed to be especially effective for them. Only Noar and colleagues (Noar, Harrington, & Aldrich, 2009) recap Webb's findings and the central question they encompass:

'Does telling participants that a message has been specifically designed for them (whether or not it is in fact true) cause them to pay greater attention to such a message and view it as more personally relevant? The Webb et al. studies suggest that the answer is 'yes,' and that this suggestion of tailoring, in and of itself, could be responsible for some of the effects of tailoring.' (Noar et al., 2009, p. 418).

As described in chapter 1, there is evidence from neuroimaging that tailored messages are processed differently from generic messages, and that they provoke more self-related thoughts (Chua et al., 2011). Note that this observation does not have to be in conflict with the possible placebo effect described above. On the contrary: introducing a message as being 'especially for you' is probably a direct cue to provoke self-related thoughts, because it explicitly relates the message to people's unique self. The finding that self-related thinking while

listening to a health message improves the effect of that message therefore strengthens the idea that it may be sufficient to just tell people that the message is especially for them.

6.5.2 Unravelling the placebo effect

The results of Webb and colleagues show that the expectation of reading a tailored message has a positive effect, but they leave open the question of what the contribution of actual tailoring is. To investigate the effect of mere tailoring, without the possibly distorting influence of recipients' expectations, Etter (2009) followed up on the results of Webb. He told all participants that they would receive tailored anti-smoking information, but the actual content was tailored for only half of the participants and generic for the other half. Although the number of participants was generous (N = 2226), the effect of the manipulation was not significant: tailored information did not make the intervention more effective than generic information.

Combined with the results of Webb, the results of Etter (2009) provide more support for the suspicion that the effect of tailoring could be merely a placebo effect. All participants expected to read a tailored message, and the finding that actual tailoring did not improve the outcomes of the intervention suggests that it is the expectation that drives the effect.

To unravel the effects of genuinely tailored health information and the placebo effect of expecting to read a highly effective tailored message, both factors would need to be manipulated separately in an experimental study. Only a full 2 (expectation: tailored versus generic) x 2 (actual content: tailored versus generic) design would allow for conclusions on the contribution of both variables. The Webb et. al studies only investigated two cells of this design (expectation: tailored versus generic), while keeping the other factor constant (actual content was always generic). The experiment of Etter investigated two other cells, (actual content: generic or tailored) while keeping the expectation constant.

Future research should test the full design, including the condition in which the information is tailored without explicitly telling recipients that it is. Based on the results of the experiments in this thesis, and on my review of the literature, I expect that this design will show only a very small main effect of tailoring, if any. The main effect of participants' expectations will probably be in line with Webb's results: information that claims to be individually tailored will lead to more positive evaluations and outcomes. Moreover, I expect this design to show an interaction effect between tailoring and expectation. Especially when information is genuinely tailored, telling people that it is meant specifically for them will have positive effects on evaluation and persuasion. See Figure 6.1 for a graphical representation of the hypothesized effect. This combination of

tailored content and emphasis on the fact that it is made exclusively for the receiver has probably been the driving force behind a major part of previous studies that reported effects of tailored health communication.

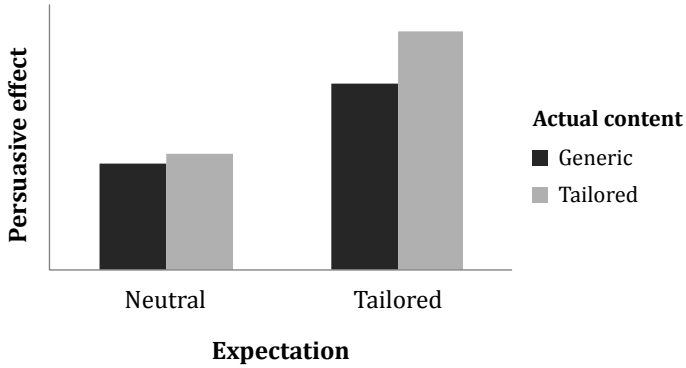

Figure 6.1 Hypothesized interaction effect between expectation and actual tailoring.

6.5.3 Priming outcome expectancies

As described above, it is possible that the placebo effect is responsible for at least part of the reported effects of tailored health communication. Another factor that may have distorted previous results is the moderating priming effect of efficiency expectancy that Webb et al. (2007) demonstrate. People who believe or are told beforehand that tailored materials are better than generic materials are especially likely to benefit from allegedly tailored messages.

It would be interesting to analyse the existing body of literature on tailored health communication to see to what degree the effect of priming can be held accountable for previous results. From what I have seen in examples of materials, it is not uncommon to introduce tailored booklets or brochures with a preface that explains about the superior effects of tailored information. Those kinds of prefaces not only affect people's expectancy of the contents of the text, they also prime outcome expectancies. Depending on the preface that is used in the non-tailored condition, which is usually a generic introduction that gives an overview of the text, this can result in an additional confounding factor: people who are informed that the text is made especially for them also expect this to have a beneficial effect on their reaction towards the text.

A meta-analysis in which outcome priming is tested as a moderating variable could be used to test the hypothesis that outcome priming enhances the effect of

explicit tailoring. Such an analysis, however, requires detailed information about the texts and manipulations used in previous research. As Harrington and Noar (2012) observe in a recent paper on reporting standards for studies on tailored health communication, this kind of information is unfortunately often lacking (for a similar point in behavioural medicine research see Davidson et al., 2003). In the absence of current availability of such information, future research should include new experiments in which the moderating effect of priming outcome expectancies is investigated.

6.6 Conclusion

All in all, there seems to be reason to question the claim that tailoring health messages to individual characteristics makes those messages more effective. Although tailoring may look like a plausible way to improve health communication, and research indeed indicated a positive effect, the effect seems to be conditional and more restricted than was previously supposed.

The fact that most published articles report on studies that show a positive effect of tailored health communication may illustrate a publication bias towards publishing only significant findings. To test whether such a bias exists, and to what degree it may lead to a false belief that an effect is statistically significant over multiple studies, researchers in meta-analyses sometimes report the so-called 'fail-safe N'. This number indicates how many unpublished negative results would have to be lying around in researchers' file drawers (Rosenthal, 1979) to render the overall effect insignificant. Krebs and colleagues (2010, p. 216) calculated this number for computer tailored health communication, and conclude that in contrast to the 88 studies in their meta-analysis, '[the] fail-safe N revealed that an additional 58 studies with null effects would be needed to reduce the overall effect size to a clinically nonsignificant outcome'. They proceed to conclude that this is a fairly large number, but this conclusion can be disputed. After all, a ratio of roughly two 'failed' experiments for each three successful experiments does not sound extraordinarily negative, from my experience. Although it is hard to estimate exactly how many nonsignificant experiments on tailored health communication there must be lying around, after writing this thesis I know that there are at least six of them.

Unpublished null results and the publication bias towards successful experiments obscure what has been labelled the 'decline effect' (Schooler, 2011). The decline effect is the pattern in which scientific findings diminish over time. Even findings that initially show strong effect sizes suffer from erosion, and they weaken or even disappear over the course of years (Lehrer, 2010). Although

there is no single one explanation that accounts for the decline effect, one important factor that seems to be in play is the statistical self-correction of initially exaggerated outcomes. The first publications about an effect usually report relatively strong effect sizes, simply because it takes a strong effect to 'prove' that something new has been found. Because of the statistical methods used, however, there is always a chance that any reported effect is merely an artefact of the analysis or a statistical outlier. It is therefore necessary to replicate effects and build upon the theory to find more evidence for the same phenomenon.

Because initial findings tend to overestimate the magnitude of the effect, subsequent studies will generally show smaller effect sizes, which are closer to the real effect size (Lehrer, 2010). But if subsequent studies do not only find smaller effects but even nonsignificant effects, these tend to be underrepresented in publications. Academic journals publish mostly significant findings, and a recent count revealed that especially in psychology, the field in which much of the research on tailored health communication has been published, more than 90% of the articles report on studies in which the hypotheses were confirmed with significant results (Yong, 2012). That means that if there are other researchers that have studied the use of alternative variables in tailored health communication and found no effects, or if there are researchers who used tailored health communication but did not find it more beneficial than generic communication, chances are that their results are still hidden in their file drawers, and that they are not represented in meta-analyses like those of Noar (Noar et al., 2007) and Krebs (Krebs et al., 2010).

Therefore, although they are not enjoyable and at some moments even discouraging, null results play an important role in unravelling the true potential of any scientific effect. Tailoring health messages to the characteristics of individual receivers sounds like a plausible way to increase the persuasiveness of these messages, because, after all, people differ from each other and their information needs can differ as well. However, as demonstrated in this thesis, before these tailored messages can be created efficiently and cost-effectively, it is crucial to know exactly under which circumstances a match between message and reader leads to a positive result and under which circumstances it does not.

SAMENVATTING *(IN DUTCH)*

Een deel van deze tekst is eerder verschenen in Jongenelen (2013).

Samenvatting

'Nederlandse buik steeds dikker', kopte het RIVM in januari vorig jaar. Maar liefst de helft van de Nederlanders is te zwaar, en met name de toename van abdominale obesitas - oftewel een te grote buikomtrek - ten opzichte van 15 jaar geleden is alarmerend (RIVM, 2012). Deze cijfers illustreren een trend die niet alleen in Nederland maar in een groot deel van het welvarende Westen gaande is: mensen consumeren te veel, bewegen te weinig, en zijn zich vaak niet bewust van de risico's en consequenties die dit met zich meebrengt. Hoewel vrijwel iedereen zal zeggen dat zijn of haar gezondheid belangrijk is, blijkt uit dergelijke observaties dat mensen dit belang niet in hun gedrag tot uiting kunnen of willen laten komen: we roken, eten verkeerd, bewegen te weinig en gaan slordig om met medicijnen. Gezond leven gaat blijkbaar niet vanzelf.

Om mensen aan te zetten tot gezonder gedrag, worden er al sinds tientallen jaren pogingen gedaan om via massamedia de boodschap over te brengen dat het beter is bepaald gedrag te laten of juist ander gedrag meer te vertonen. In 2006 verscheen een review van Noar, waarin hij onderzoek naar de campagnes van de voorgaande 10 jaar onder de loep neemt en vergelijkt met de campagnes in de decennia daarvoor. In dit historisch overzicht beschrijft Noar hoe massamediale campagnes in eerste instantie slechts minimaal effect wisten te oogsten, maar dat ze langzaamaan iets effectiever worden. Door meer onderzoek naar de voorwaardelijke aspecten van succes wordt steeds meer duidelijk over het hoe en waarom van effectieve campagnes.

Eén van de factoren die het sterkst bijdragen aan het succes van een campagne, blijkt uit Noars (2006) analyse, is wet- en regelgeving: het lukt beter om mensen aan te zetten tot gezonder gedrag wanneer er een wet aan gekoppeld is om het gedrag te bekrachtigen (zie ook Maio et al., 2007 en Verplanken & Wood, 2006). Een voorbeeld hiervan is het verbod op roken in de horeca: er zijn aanwijzingen dat sinds het ingaan van het rookverbod in de horeca er steeds meer mensen ook een rookverbod thuis instellen (Mons et al., 2012). Wetgeving is echter niet altijd mogelijk of wenselijk, zelfs als het gedrag gevaarlijk kan zijn voor het welzijn van grote groepen mensen. Antibioticaresistentie is bijvoorbeeld een groeiend probleem voor de wereldwijde bestrijding van infectieziekten, dat deels wordt veroorzaakt door onzorgvuldig gebruik van antibiotica. Een scenario waarin een apotheker een boete oplegt aan een patiënt die zijn kuur niet heeft afgemaakt, is echter ondenkbaar. Veel gezondheidscampagnes moeten het dan ook doen zonder steuntje in de rug van de wet, en moeten door voorlichting en overtuiging mensen zo ver krijgen dat ze goed voor zichzelf zorgen. Volgens Noar kunnen dergelijke campagnes effectief zijn, maar is de gemiddelde effectsterkte klein (r = .05).

Een van de problemen van massamediale campagnes is dat ze zich moeten richten tot 'de gemiddelde' persoon in hun doelgroep. Ook een campagne die zich richt op een specifieke doelgroep is nog altijd gericht op honderden mensen tegelijk, en zal dus pogen met een beperkt aantal (of zelfs één enkele) boodschappen al deze mensen tegelijk aan te spreken. Hoe specifieker de subgroep des te meer de personen in de doelgroep op elkaar lijken, maar individuele verschillen blijven een rol spelen in de manier waarop de boodschap ontvangen, verwerkt en al dan niet geaccepteerd wordt.

In 1999 presenteerden Kreuter, Strecher en Glassman een alternatieve aanpak: gezondheidscommunicatie op maat, oftewel 'tailored health communication'. Bij op maat gemaakte communicatie is een boodschap specifiek gericht op één persoon, op basis van individuele kenmerken van die persoon die van tevoren in kaart gebracht zijn. Doordat dergelijke berichten speciaal voor iemand gemaakt zijn, bevatten ze ook alleen informatie die relevant is voor de ontvanger. Er kan bijvoorbeeld rekening gehouden worden met de omstandigheden van een persoon (gezinsleden die wel of niet mee willen helpen met een poging om te stoppen met roken), diens verleden (eerdere pogingen om te stoppen), of specifieke bezwaren of zorgen die iemand heeft (het weerstaan van de sociale druk om te roken op een feestje). Doordat alle informatie in het bericht relevant is, zou de ontvanger volgens Kreuter en collega's (1999) meer aandacht hebben voor het bericht, waardoor de boodschap grondiger wordt verwerkt en de kans op gedragsverandering groter is (het Elaboration Likelihood Model: Petty & Cacioppo, 1981).

Sinds de introductie van gezondheidscommunicatie op maat zijn er vele tientallen wetenschappelijke artikelen verschenen over het onderwerp. Veelal worden in deze artikelen experimenten beschreven waarin op maat gemaakte communicatie wordt vergeleken met een controleconditie, zoals generieke communicatie of andere interventies. Uit meta-anlyses van deze onderzoeken (Noar, Benac en Harris, 2007; Krebs, Prochaska en Rossi, 2010) blijkt dat op maat gemaakte gezondheidscommunicatie inderdaad effectiever is dan generieke gezondheidscommunicatie, maar er blijkt ook uit dat de effectsterktes over het algemeen tamelijk klein zijn. Naast deze kleine effectsterkte kaarten Noar en collega's (2007) nog een ander probleem aan: in vrijwel alle gepubliceerde studies wordt gebruikgemaakt van dezelfde handvol variabelen om de gezondheidsboodschappen op maat te maken. Er worden in de door hen onderzochte publicaties in totaal acht verschillende theorieën uit de gedragswetenschappen gebruikt om de inhoud van een boodschap aan te passen aan de ontvanger, en in meer dan 80% van de studies zijn dat zelfs dezelfde vier: de fasen van gedragsverandering (Stages of Change) en het Transtheoretical Model (Prochaska & DiClemente, 1983), het Health Belief Model (Janz & Becker, 1984), en Social Cognitive Theory (Bandura, 1998).

Deze vier theorieën zijn zogenoemde gedragstheorieën, die beschrijven welke factoren een rol spelen in de totstandkoming van gedrag. Als zodanig zijn ze zeer bruikbaar om gezondheidscommunicatie op maat te maken, omdat ze kunnen helpen om in kaart te brengen welke factoren er voor een specifiek individu veranderd moeten worden om gezonder gedrag te gaan vertonen. Naast deze gedragsfactoren zou communicatie op maat volgens Kreuter en collega's (2000) ook gebruik kunnen maken van de niet-gedragsgerelateerde verschillen tussen mensen. Factoren als religie, cultuur en persoonlijke voorkeuren zouden meegenomen kunnen worden om de boodschap niet inhoudelijk maar ook qua communicatievorm aan te passen aan de individuele ontvanger. Hoewel dit idee in 2000 werd geïntroduceerd, is er weinig onderzoek gepubliceerd waarin het verschil tussen gedragstheorieën en niet-gedragsgerelateerde factoren wat betreft hun bruikbaarheid voor op maat gemaakte communicatie is onderzocht. Al met al zou op maat gemaakte gezondheidscommunicatie dus een manier kunnen zijn om mensen aan te zetten tot gezonder gedrag, maar er zijn nog veel dingen onduidelijk. Zo lijkt de effectsterkte klein te zijn, en is niet duidelijk of het effect beperkt is tot de vier veelgebruikte theorieën of dat het effect breder is dan dat. Het beschikbare onderzoek naar de effectiviteit en werking van communicatie op maat schetst een te beperkt beeld om in te kunnen schatten wat de mogelijkheden en beperkingen ervan zijn. In dit proefschrift worden daarom zes experimenten beschreven waarin nieuwe combinaties van tekst- en persoonskenmerken worden getoetst op hun bruikbaarheid voor gezondheidscommunicatie op maat.

De globale onderzoeksmethode is voor alle zes de experimenten gelijk: er wordt steeds een tekst met advies over gezond gedrag geschreven in twee varianten, waarbij verwacht wordt dat de ene versie beter past bij mensen met bepaalde persoonskenmerken en de andere versie juist bij mensen met andere kenmerken. Door de helft van de mensen een 'passende' tekst te laten lezen en de andere helft de 'niet passende' tekst, kan worden gemeten of zo'n passende tekst inderdaad leidt tot meer gedragsverandering, een positiever oordeel over de tekst, of anderszins betere effecten dan een niet passende tekst. De persoonskenmerken en de bijbehorende variaties in de gezondheidstekst verschillen per hoofdstuk.

In hoofdstuk 2 wordt onderzocht of een tekst over lichaamsbeweging meer impact heeft wanneer de effecten van lichaamsbeweging worden 'geframed' op een manier die past bij de motivationele oriëntatie van de ontvanger. De hypothese is dat een tekst in een winst-frame ('bij voldoende lichaamsbeweging verbetert je conditie') meer effect heeft dan een tekst in een verlies-frame ('bij onvoldoende lichaamsbeweging verslechtert je conditie') voor mensen met een benaderingsmotivatie, omdat zij vooral gericht zijn op het behalen van positieve uitkomsten. Het omgekeerde wordt verwacht voor mensen met een vermijdings-

motivatie, omdat die gericht zijn op het vermijden van negatieve dingen. Eerdere onderzoeken (Mann et al., 2004; Sherman et al., 2006; Updegraff et al., 2007) hebben deze relatie al aangetoond, maar daarin werd keer op keer dezelfde tekst gebruikt over mondhygiëne en waren de resultaten en de verdeling van proefpersonen niet altijd consistent.

Tegen de verwachting in bevestigen de resultaten van hoofdstuk 2 niet de eerder gevonden onderzoeksresultaten. Hoewel de proefpersonen de gain-framed tekst beoordelen als meer gericht op gunstige uitkomsten dan de loss-framed tekst, en de manipulatie van de tekst daarmee geslaagd lijkt, is er geen verband tussen de motivationele oriëntatie van de proefpersonen en hun oordeel over de tekst. Blijkbaar zijn de effecten die eerder gevonden werden met een tekst over mondhygiëne niet zondermeer terug te vinden met een tekst over lichaamsbeweging. De verklaring hiervoor zou kunnen liggen in de zekerheid waarmee het aanbevolen gedrag leidt tot de gunstige uitkomsten (of het niet uitvoeren van het gedrag tot ongunstige uitkomsten). Bij mondhygiëne is de link tussen gedrag en uitkomsten veel directer dan bij lichaamsbeweging (zie ook O'keefe & Jenssen, 2007). Vervolgonderzoek zou moeten aantonen of deze verklaring inderdaad een rol speelt in de resultaten van dit experiment, maar voorlopig is de conclusie van hoofdstuk 2 dat een gezondheidstekst op maat maken door het frame aan te passen aan de motivationele oriëntatie van de ontvanger niet per definitie leidt tot een meer overtuigende tekst.

In hoofdstuk 3 worden twee experimenten beschreven waarin het verschil tussen de teksten niet zit in de framing van de effecten, maar in de sociale druk om gezond gedrag uit te voeren. De tekst beschrijft de voordelen van lichaamsbeweging in het dagelijks leven en adviseert om bijvoorbeeld met de trap te gaan in plaats van met de lift. In de ene versie wordt vermeld dat de meerderheid (74%) van de studenten dat regelmatig doet, in de andere versie is dat juist de minderheid (26%). De verwachting is dat studenten met een sterke neiging tot self-monitoring (M. Snyder, 1974) hun gedrag aanpassen aan deze norm. Hoge self-monitors letten namelijk op het gedrag van anderen om af te leiden wat het meest gepaste gedrag is in een bepaalde situatie. Van lage self-monitors wordt in deze studie verwacht dat ze zich niet aanpassen aan de norm in de tekst.

In het eerste experiment kregen de proefpersonen de tekst te lezen in een kamer op de 5e verdieping, waarna ze met een smoesje naar de 8e verdieping werden gestuurd. Zonder dat ze het doorhadden, werd geobserveerd of ze de trap of de lift namen. In het tweede experiment kregen de proefpersonen niet echt de keuze tussen trap en lift, maar werd gevraagd wat ze op dat moment zouden doen. In beide experimenten werd het verwachte effect niet gevonden: ongeacht de beschreven norm en ongeacht hun self-monitoring had iets meer dan de helft een voorkeur voor de lift boven de trap.

De resultaten van hoofdstuk 3 zijn niet in lijn met eerder onderzoek waarin het gedrag van anderen sturend was voor het gedrag van proefpersonen (bijvoorbeeld Cialdini & Goldstein, 2004). De verklaring hiervoor ligt waarschijnlijk in het feit dat bij veel van die voorgaande onderzoeken het gedrag een sociale component had. Wanneer het bijvoorbeeld gaat over energiebesparing, of het recyclen van afval, is het nuttig om je eigen gedrag af te stemmen met dat van de mensen om je heen. Bij de keuze tussen de trap in plaats van de lift daarentegen, heeft het gedrag dat je vertoont alleen effect op jezelf: je draagt niet bij aan een gezamenlijk doel als je het wel doet en je benadeelt er niemand mee als je het niet doet. Een recente studie van Yun en Silk (2011) laat daarnaast zien dat het belangrijk is om de juiste referentiegroep te kiezen bij het vermelden van een sociale norm. In hun onderzoek lieten proefpersonen zich eerder sturen door gedrag van hun vrienden dan door dat van anonieme medestudenten. Wellicht dat beide aspecten samen voor een meer genuanceerde verklaring van sociale normen zorgen: gedrag met een sterk sociale component (zoals energiebesparing) wordt wellicht wel gestuurd door de norm van een anonieme referentiegroep, terwijl voor gedrag zonder sociale component (zoals traplopen) de norm van nabije anderen zoals vrienden nodig is om het te veranderen. Deze verklaring zou in verder onderzoek getoetst moeten worden, maar voor dit hoofdstuk is de conclusie dat het in elk geval geen nut lijkt te hebben om rekening te houden met iemands self-monitoring score om teksten met gezondheidsadvies al dan niet van een sociale norm te voorzien.

Ook in hoofdstuk 4 staat de keuze tussen lift en trap centraal, maar in dit geval wordt niet de inhoud van de boodschap maar juist de manier waarop die geformuleerd is, gevarieerd. De ene versie beschrijft in abstracte termen waarom het belangrijk is om genoeg te bewegen in het dagelijks leven (‘minder kans op ernstige lichamelijke ziekten en aandoeningen’), terwijl de andere versie gebruikmaakt van concrete voorbeelden (‘minder kans op ernstige hartklachten, darmkanker en diabetes’, gebaseerd op Miller, Lane, Deatrick, Young, & Potts, 2007). Het bijbehorende persoonskenmerk van de deelnemers in dit hoofdstuk is Need for Closure (Webster & Kruglanski, 1994), een eigenschap die beschrijft hoeveel of hoe weinig behoefte iemand heeft aan duidelijkheid en zekerheid.

De verwachting in twee experimenten was dat mensen met een hoge Need for Closure eerder hun gedrag en gedragsintenties zouden aanpassen na het lezen van de concrete tekst, terwijl mensen met een lage Need for Closure dat zouden doen na de abstracte tekst. Hoewel de manipulatie van de tekst geslaagd was, bleef wederom het verwachtte effect uit. Dit zou te maken kunnen hebben met het feit dat de gebruikte Need for Closure schaal een vrij lage betrouwbaarheid bleek te hebben, wat het moeilijk maakt om harde conclusies aan de resultaten te verbinden. De voorlopige conclusie lijkt echter te passen in de trend

van de resultaten van de eerdere hoofdstukken: een tekst op maat maken door abstract of concreet taalgebruik te kiezen, afhankelijk van iemands Need for Closure, lijkt geen bruikbare methode om gezondheidsteksten effectiever te maken.

In hoofdstuk 5, het laatste empirische hoofdstuk, wordt een ander gezondheidsthema en een andere variatie in formulering gebruikt. De tekst gaat over het doen van een soa-test, en is de ene versie vrij dwingend geschreven ('je moet een soa-test doen als…'), en in de andere versie meer vrijblijvend ('het is verstandig om een soa-test te doen als…'). Hoewel een dwingende tekst meer overtuigend kan zijn (Miller et al., 2007), kan hij ook eerder leiden tot boosheid en een tegenreactie van de ontvanger van de tekst (Brehm, 1966). Het is daarom niet zondermeer verstandig om mensen zo expliciet mogelijk aan te zetten tot gedragsverandering, maar wellicht dat een dwingende tekst wel goed wordt ontvangen door mensen met een externe Locus of Control (Rotter, 1966). Zij hebben namelijk, meer dan mensen met een interne Locus of Control, het gevoel dat hun gezondheid grotendeels wordt bepaalde door externe factoren (Wallston, Wallston & DeVellis, 1978). Mensen met een interne Locus of Control hebben daarentegen het gevoel dat ze hun gezondheid zelf de in hand hebben, en de verwachting is dat ook dat zij sterk negatief reageren op een dwingende tekst maar beter op een vrijblijvende tekst die ze alleen van advies voorziet over hoe te handelen.

Hoewel de resultaten van hoofdstuk 5 laten zien dat de dwingende formulering inderdaad bij lezers een gevoel van druk veroorzaakte, en daarmee tot een negatieve reactie op de tekst leidde, speelde Locus of Control geen rol in deze reactie. Wel was het zo dat de negatieve reactie op de tekst twee elementen bleek te bevatten: mensen raakten zowel meer geïrriteerd als meer bezorgd door de dwingende tekst. De irritatie leek zich vooral te uiten in een negatieve evaluatie van de tekst, maar tegelijk leek de bezorgdheid te leiden tot een iets sterkere intentie om in de toekomst een soa-test te gaan doen. Dit biedt interessante opties voor vervolgonderzoek naar het effect van negatieve emoties in persuasieve gezondheidscommunicatie. Het aanpassen van de dwang van de tekst aan de Locus of Control van de lezer lijkt echter geen bruikbare strategie voor op maat gemaakte communicatie.

Samengevat beschrijven hoofdstuk 2 tot en met 5 zes experimenten waarin getoetst werd of een gezondheidstekst effectiever wordt als er specifieke kenmerken van de ontvanger worden meegenomen in het ontwerpen van de tekst. In eerder onderzoek was dit van een handvol persoons- en tekstkenmerken al aangetoond, en de vraag was in hoeverre dit effect ook met andere variabelen gevonden kon worden. De resultaten lijken te wijzen op een negatief antwoord: de teksten in deze experimenten werden niet effectiever wanner zij pasten bij de

ontvanger. In hoofdstuk 6 wordt ingegaan op mogelijke statistische en methodologische problemen, die zouden kunnen verklaren waarom de resultaten van de experimenten niet in lijn met de verwachting waren. Deze kwesties lijken echter niet afdoende om het consistente patroon van niet-significante resultaten over de hoofdstukken heen te verklaren, en daarom sluit hoofdstuk 6 af met een discussie over de implicaties van deze bevindingen voor de theorie over gezondheidscommunicatie op maat.

Het ligt het meest voor de hand om in eerste instantie te kijken naar het verschil tussen de theorieën die in eerder onderzoek werden gebruikt om succesvolle communicatie op maat te maken versus de theorieën die niet efficiënt lijken, zoals die in de experimenten in dit proefschrift. Uit de meta-analyse van Noar et al. (2007) is al gebleken dat de fasen van gedragsverandering (Stages of Change) en het Transtheoretical Model (Prochaska & DiClemente, 1983), het Health Belief Model (Janz & Becker, 1984), en Social Cognitive Theory (Bandura, 1998) bruikbare theorieën zijn, maar het is niet duidelijk waarom juist deze wel en andere niet leiden tot efficiëntere gezondheidscommunicatie. Een nieuwe meta-analyse, waarin specifiek gekeken wordt naar het verschil tussen de theoretische basis van succesvolle versus onsuccesvolle communicatie op maat, zou meer inzicht kunnen verschaffen in deze vraag. Helaas worden niet succesvolle studies echter zelden gepubliceerd, wat het moeilijk maakt om een dergelijke meta-analyse uit te voeren.

Een andere verklaring voor het uitblijven van de verwachte resultaten zou kunnen liggen in de context waarin de gezondheidsteksten werden aangeboden. Uit de spaarzame voorbeelden van volledig onderzoeksmateriaal (zie bijvoorbeeld de folder in hoofdstuk 1) lijkt het op maat gemaakte materiaal vaak te worden ingeleid met zinnen als 'deze folder is speciaal voor jou gemaakt, gebaseerd op de informatie die we van jou gekregen hebben'. Onderzoek van Webb en collega's (Webb et al., 2005; Webb et al., 2007) suggereert dat alleen al die verwachting om een op maat gemaakte folder te lezen kan zorgen voor meer positieve reacties van een lezer. Zij vergelijken folders over stoppen met roken waarin in de ene versie de verwachting wordt gewekt dat die speciaal voor de ontvanger gemaakt is, en in de andere versie niet, en vinden dat dit zogenaamde placebo-effect inderdaad zorgt voor een sterkere intentie om te stoppen met roken. In een vervolgonderzoek van Etter (2009) is gekeken naar de werkelijke bijdrage van het op maat maken van de inhoud. In dat onderzoek werd aan alle proefpersonen verteld dat de folder speciaal voor hen was gemaakt, terwijl dat in werkelijkheid slechts voor de helft van de mensen het geval was. Er bleek geen verschil in effectiviteit tussen deze twee versies te zijn, wat zou kunnen betekenen dat het niet uitmaakt of de inhoud op maat gemaakt is zolang de lezer maar denkt dat dit het geval is.

Om vast te stellen in hoeverre de effectiviteit van op maat gemaakte gezondheidscommunicatie inderdaad is toe te schrijven aan een placebo-effect, is echter een studie nodig die de onderzoeken van Webb en Etter combineert. In die studie zou het effect van de twee afzonderlijke factoren met elkaar vergeleken moeten worden in een 2x2 ontwerp: de verwachting van de lezer (dat de folder speciaal gemaakt is of dat het een standaard tekst is) en de werkelijke inhoud (op maat gemaakt of generiek). Als uit deze studie blijkt dat de verwachting van de lezer inderdaad een essentiële (of zelfs afdoende) voorwaarde is voor het positieve effect van op maat gemaakte communicatie, dan zou dat ook verklaren waarom de studies in dit proefschrift het effect niet vonden.

Tot slot suggereert het onderzoek van Webb en collega's (2007) dat er een rol is weggelegd voor uitkomstverwachtingen van de lezer. Mensen die van tevoren denken dat op maat gemaakte communicatie effectiever is dan generieke communicatie, of aan wie is verteld dat dat zo is, reageren positiever op een (zogenaamd) op maat gemaakte tekst. Ook deze bevinding zou kunnen betekenen dat de resultaten van eerder onderzoek in een nieuw licht moeten worden bekeken. Niet alleen worden sommige folders geïntroduceerd met een zin als 'deze folder is speciaal voor jou', ook wordt er soms bij vermeld dat de folder daarom beter zou zijn. Wellicht dat in veel van het tot nu toe gepubliceerde onderzoek ook sprake is geweest van een dergelijke *priming* van verwachtingen, maar de methodesecties van gepubliceerde artikelen geeft over het algemeen niet genoeg details om te kunnen bepalen hoe vaak en in welke vorm dergelijke zinnen zijn voorgekomen (zie ook Harrington en Noar, 2012, voor een discussie van het gebrek aan standaardinformatie in artikelen over op maat gemaakte communicatie).

Al met al lijkt op maat gemaakte gezondheidscommunicatie dus onder bepaalde omstandigheden effectiever te zijn dan generieke gezondheidscommunicatie, maar is nog niet duidelijk welke omstandigheden dit precies zijn. In de bestaande literatuur lijkt een te optimistisch beeld geschetst te worden van de potenties en toepasbaarheid van gezondheidscommunicatie op maat, terwijl er te weinig aandacht is voor mogelijke alternatieve verklaringen en beperkingen. Een vollediger beeld van het veld is nodig om de werkelijke mogelijkheden en grenzen te overzien, en ik hoop daar met dit proefschrift een bijdrage aan te hebben geleverd.

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Dankwoord

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CURRICULUM VITAE

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Curriculum Vitae

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